BL
254
H4

GOD
in the Space Age

By MARTIN J. HEINECKEN, Ph.D.

Professor of Systematic Theology
The Lutheran Theological Seminary
Philadelphia, Pennsylvania

THE JOHN C. WINSTON COMPANY
PHILADELPHIA · TORONTO

© 1959 by
MARTIN J. HEINECKEN

FIRST EDITION

Theology Library
SCHOOL OF THEOLOGY
AT CLAREMONT
California

Library of Congress Catalog Card Number 59-5327

MADE IN THE UNITED STATES OF AMERICA

To Clarence C. Stoughton

Other Books by the Author

THE MOMENT BEFORE GOD
An Interpretation of Kierkegaard

CHRIST FREES AND UNITES

BASIC CHRISTIAN TEACHINGS

TRUTHS WE LIVE BY

Contents

CHAPTER PAGE

1. The Challenge of the Space Age 1

2. Concerning the Relation Between Science and Religion—I 17

3. Concerning the Relation Between Science and Religion—II 45

4. Will Space Explorers Discover God and Heaven? 85

5. Life on Other Planets 115

6. Whose Property is the Moon? 147

7. God-Given Challenge and Opportunity . . 163

Appendix 190

Notes 205

Index 209

ACKNOWLEDGMENTS

The author wishes to express his thanks and appreciation to the following authors and publishers for their kind permission to include selections from their works in this volume:

Andrew G. Haley and *The American Weekly* for a selection from "Can Russia Claim the Moon?" reprinted from The AMERICAN WEEKLY, copyright 1958 by Hearst Publishing Co., Inc.; George Braziller, Inc., for a selection from A HISTORY OF THE WARFARE OF SCIENCE WITH THEOLOGY IN CHRISTENDOM by Andrew D. White; C. S. Lewis and the *Christian Herald* magazine for a selection from "Will We Lose God in Outer Space?"; The Dial Press for selections from Aeschylus: *Prometheus Bound* translated by Edith Hamilton. Reprinted from GREEK PLAYS IN MODERN TRANSLATION, edited by Dudley Fitts, 1947; Doubleday & Company, Inc., for selections from Bertolt Brecht, "The Threepenny Opera" (Bentley-Vesey Version); Houghton Mifflin Company for selections from J.B. by Archibald MacLeish; *Jet Propulsion* for selections from "Basic Concepts of Space Law" by Andrew G. Haley; *National Council Outlook* for selections from "A Symposium . . . The Conquest of Outer Space"; New Directions for two lines from "Do Not Go Gentle Into That Good Night." Copyright, 1952, 1953 by Dylan Thomas. Reprinted by permission of New Directions; The Oxford University Press, Inc., for selections from RELIGION AND SCIENCE by Bertrand Russell, CHRISTIAN DISCOURSES by Søren Kierkegaard and THE JOURNALS OF SØREN KIERKEGAARD edited by Alexander Dru; Princeton University Press for a selection from D. F. Swenson's translation of WORKS OF LOVE by Søren Kierkegaard; Random House, Inc., for selections from THE IMMENSE JOURNEY, by Loren Eiseley. Copyright 1953, 1957 by Loren Eiseley. Reprinted by permission of Random House, Inc.; Sheed and Ward, Inc., for selections from THE CONFESSIONS OF SAINT AUGUSTINE in the translation of F. J. Sheed, Copyright 1943, Sheed and Ward, Inc., New York; University of Chicago Press for selections from SYSTEMATIC THEOLOGY II, *Existence and the Christ*, by Paul Tillich. Copyright 1957 by the University of Chicago; University of North Carolina Press for a selection from SCIENCE AND CHRISTIAN BELIEF by C. A. Coulson; The John C. Winston Company for selections from ROCKETS THROUGH SPACE by Lester del Rey and SPACEPOWER by Donald Cox and Michael Stoiko; Yale University Press for selections from A COMMON FAITH by John Dewey and ON UNDERSTANDING SCIENCE by James B. Conant.

Chapter 1

THE CHALLENGE OF THE SPACE AGE

By Way of Introduction

NOTHING has fired the imagination of late quite like the launching of the first man-made satellite on October 4, 1957. Suddenly, interplanetary space travel has moved out of the realm of fantastic fiction into that of fact. It is now only a question of time until men will actually be soaring off to the moon, the planets, the stars, and the farthest reaches of space. A new science has been added to the long list of those that betoken man's conquest of the world in which he lives, the science of "astronautics," defined as, "The science of man's movements and/or his instruments in the Universe," . . . covering "many subdivisions, including anthropology, astronomy, astrophysics, space law, space medicine, space sociology, and space flight."[1]

Willy Ley, Herman Oberth, and Wernher von Braun are the magic names in the field of rocketry. They were members of the German Rocket Society, which gave the development of the rocket its initial push. Later, Von Braun was among the scientists working at the German rocket installations at Peenemünde, from which he came to the United States. About five thousand scientists, engineers, and technicians were taken by the Russians from these Peenemünde installations, which is one of the reasons for Russian leadership in this field today, in addition to the fact that the totalitarian organization of the state gears everything toward technological advancement without the delays and inefficiency of the democratic process.

In an address before the American Rocket Society, Dr. von Braun, Director, Development Operations Division, U. S. Army Ordnance Missile Command, said, "A few years ago that very word—astronautics—was virtually unknown, and most people bothering to stop and reflect about its meaning would at best have taken it as a mild joke. Today one of the largest and best reputed aircraft companies in the United States has its $40,000,000 Astronautics Division with thousands of employees. And in those astronautical meetings of scientists and engineers the arguments no longer rage about the feasibility of this or that paper proposal, but about test programs, schedules, budgets, tracking organizations, and rocket hardware. There can no longer be any doubt about the fact that Astronautics has reached the state of practical engineering."[2]

Andrew G. Haley, President of the International Astronautical Federation and General Counsel of the American Rocket Society, outlined the prospects of practical accomplishments for the next twenty-five years. "In the first period, between now and 1970, we may expect instrument-carrying satellites weighing up to one ton to be boosted to stations in the twenty-four-hour orbit. These will have indefinite power supply, a long operational life, and can be made recoverable when necessary. We may expect also studies of the moon to be made by encircling satellites carrying instruments. . . . And, in this first period, we may expect to see satellites instrumented for planetary and solar research prowling about the domains of Venus and Mars.

"The second . . . stage [1970-1983] will introduce manned space flight. We should be able to develop hypersonic gliders capable of returning to earth with a human crew aboard after being boosted into the regions where Sputnik II and Explorer I are now operating. Next, we should anticipate the launching of earth satellites large enough to hold crews of from four to ten persons. . . . And, finally, we should be able to accomplish what Herman Oberth predicted thirty-five years ago—explorations by man himself to the moon, first by circumnavigation and then by landing."[3]

Spacepower,[4] by Donald Cox and Michael Stoiko, and *Rockets Through Space*,[5] by Lester del Rey give more detailed, scientifically plausible descriptions of this first moon exploration and landing.

These are the immediate aspects of space travel. Once these stages are passed, voyages to the nearer planets, and eventually interstellar and intergalactic flights are by no means out of the question. There has been such a major break-through that the realization of these further ventures is actually only a question of time. It is like making the first hole in a dike. For many years the dike stands impregnable, but once there is the tiniest break-through, it is only a question of time until the whole dike is swept away. Space flight research is now in all seriousness divided into:

(1) *Contiguous space flight* outside the earth's sensible atmosphere (which extends to between four hundred and a thousand miles above sea level) within the earth-moon system. In this venture, children now living will have a part.

(2) *Interplanetary space flight* within our solar system specifically on a planetary basis. The first planets likely to be explored are Venus and Mars, the orbits of which are adjacent to that of our earth.

(3) *Interstellar space flight* between stars within the Milky Way. Such flights, involving distances that stagger the imagination, will come when present chemical propellants are supplemented by nuclear and by ion and photon propulsion, by means of which unlimited speeds may be obtained.

(4) *Intergalactic space flight*, all flights which describe their mission within the universe, specifically between galactic systems, a galaxy being one of the immense clusters of stars such as constitute our Milky Way. Such flights are, of course, for the far-distant future, but even these should not be ruled out as a possibility.

As far as the speed of travel is concerned, it is safe to say that man will be traveling at least 50,000 miles per hour in the year A.D. 2000, and instruments up to 150,000 miles per hour.[6] At a meeting of scientists at The Evangelical Academy, Loccum, Germany, there was even serious consideration of manned spaceships approaching the speed of light (186,000 miles a second), although others deny this as a possibility.[7]

Whatever prognostications we make about the speeds at which men will travel in the distant future, this, at least, is sober fact. At present, the new jetliners are traveling at the rate of more than seven miles a minute. Possibly by 1963 we can count on commercial planes traveling in excess of the speed of sound (hypersonic speeds—sound travels at approximately the rate of 760 miles per hour). Such planes are already on the drawing boards of American, Russian, English, and French aircraft industries. About 1970 we can count on commercial planes traveling at speeds in excess of 2,500 miles per hour.[8]

Of course there are still many difficulties to be overcome. The Loccum report lists: (1) The acceleration in starting and stopping. (2) Weightlessness at distances beyond the earth's gravitational pull. (3) The effect of cosmic rays. According to Prof. Dr. von Diringshofen, a space-travel biologist, however, none of these biological difficulties are insurmountable, and if man can devise the technical means for space flight, he will also be able to overcome the biological difficulties.[9]

Optimism for the Future

Since these are the sober prospects, it is no wonder that some people are proudly elated. They see no limit to man's conquest until at last he establishes himself as complete master of his fate. They point to the so-called cosmic clock. For untold billions of years, starry galaxies have been spinning in space. For millions of years this earth has been revolving about the sun. The estimate is that our earth is 2,850 million years old. If this span of time is represented by the movement of the hands of the clock for the twenty-four hours from midnight to midnight, then 10:51 P.M. marks the awakening of organic life; twenty-two seconds before midnight marks the appearance of man, and the whole of recorded world history will have transpired in the last three-tenths of a second. Since the beginning of really successful natural science dates only from about A.D. 1600 and it is not until the present generation that the really amazing advances have been made, with the splitting of the atom marking the beginning of our altogether new age, it is obvious what an infinitesimal fraction of time this represents on the cosmic clock. It is no wonder men have high hopes for the future. With such phenomenal success in the last split second, who knows what the next hours or even minutes will bring?

So, for example, Wernher von Braun sees in the technological revolution the beginning of the end of human slavery. In the past, all the great civilizations were founded on some form of human bondage. But by means of technology, the way has been opened to allow not only a favored few but every man "to deploy his capabilities in the light of universal freedom."[10]

While taking into account the seamy side of the first phase of the technological revolution, with its overcrowded cities, assembly-line workers and mass men, he goes on to point out the advances already made. These advances, of course, always continue to present possibilities for evil as well as for good. Man's chief problem is ethical. Its solution requires, therefore, the right kind of partnership between religion and science. Pride in human achievement kills humility, which is ". . . the mother of any true scientific progress."[11]

In fact, the technological revolution has brought to light many more mysteries than were known to a less enlightened age. So there is no reason to dethrone God. "Science and scientists should put this simple but widely unknown truth across to people everywhere. With all the modern means at our disposal, with schools, churches, educational institutions, press, radio and television, we should tell the world that religion and science are not incompatible; that, on the contrary, they belong together. For only with God reinstated in the heart of the world, will He furnish Mankind and its leaders the ethical guidance through the dangers and pitfalls of the Technological Revolution."[12]

In spite of all the unpleasant aspects of the technological age, the solution is not the return to the simple life, but the pursuit of the technological revolution with even greater zeal and determination. The technological revolution can be kept alive, Von Braun insists, only by continuous research. Such research, motivated by plain curiosity, is its own justification. The desire to know, the disinterested search for truth for its own sake, must not be stifled by pragmatic considerations.

He sees in space flight, therefore, the beginning of an altogether new era as man extends his activities beyond the realm of his home planet. A whole host of new researches and new activities are springing up. Astronomers, astrophysicists, radiation experts, medical researchers, meteorologists, botanists, zoologists, geologists, archeologists, mapping experts, and perhaps even interplanetary mining experts are all involved.

So Von Braun concludes on this prophetic note: "It is the ultimate objective of our great Technological Revolution to free Man from the slavery of heavy physical labor, to elevate mankind from its historical bondage to a race of masters, in whose service toils an army of mechanical and electrical slaves.

"This liberation through technology will enable Man to devote more time to think and to dream; it will raise all our civilizations to levels never before attained in human history. Space flight will free Man from his remaining chains, the chains of gravity which still tie him to this planet. It will open to him the gates of Heaven."[13]

Such an extravagant claim will certainly need examination. Does technological advancement really offer the "keys of the kingdom," or are there points of man's impotence over which technological advancement has no control whatsoever? And even if technology advances so far that it will be able to give man control over his own thoughts, emotions, and will, and those of his fellow men, the question still remains whether or not he has the right to exercise this control and thus rob himself of the freedom of responsible decision. If there is a God who reigns supreme, who, out of love for his creation, refuses to manipulate man and to turn the personal I-Thou relation into an impersonal I-It relation in order to preserve for him both the anguish and the glory of free and responsible behavior, should man then presume to do what God in love will not do? Is not the precarious venture of life, lived as it always is between the possibilities of either heaven or hell, love or hate, trust or mistrust, infinitely preferable to a narrow, one-eyed reduction of life to what can be measured and controlled, with all the joy of the venture gone? Is not the spotless, germproof, sanitary, glass-enclosed, absolutely safe and secure world of the future just as revolting a prospect as some views of heaven—as monotonous as only hell itself could be, and worthy only of cabbages? However we vision the future and what technology is able to do to free man from unnecessary drudgery and to provide equal opportunity for development to all, is not the crisislike character of life, of the necessity for responsible decision, of the continuing battle against evil and the very real possibility of a fall, by all means to be maintained? Is not to suppose otherwise to live in a fool's paradise?

A Note of Humility

While some have obviously let man's phenomenal successes go to their heads so that their pride knows no bounds, and they see man as the lord of the universe with no limit to his conquests, there are others, who, though equally elated, are correspondingly humbled by the fact that such power has been given to men. They see the smallness as well as the greatness of man in the vastness of the universe. They echo the great Pascal's realization that if man is nothing but a reed, he is at least a thinking reed. The degree to which one is aware of his smallness in the universe is the measure of his greatness. Tiny man, peering off into the far reaches of space and comprehending its vastness with the powers of his mind, is indeed a greater Titan than a dumb and senseless colossus whose arms could embrace the galaxies. Also, it is precisely in the increase of man's power that they see the limitations upon it. The humble man can see the potentialities for both good and evil in this increase of power and is thereby driven to his knees. Suddenly the words of the prophet Isaiah are fraught with new and awful meaning in contemplation of Him upon whom all this universe depends for its being, and without whose creative power it would all go out like the light of a candle in a vagrant breeze.

> "Behold, the nations are as a drop of a bucket, and are counted as the small dust of the balance: . . . All nations before him are as nothing; and they are counted to him less than nothing, and vanity. . . . To whom then will ye liken me, or shall I be equal? saith the Holy One. Lift up your eyes on high, and behold who hath created these things, that bringeth out their host by number: he calleth them all by names by the greatness of his might, for that he is strong in power; not one faileth." Isa. 40:15, 17, 25, 26

The Reaction of the Churches

On the whole, the leaders of the church today see no affront to God in this new manifestation of power, provided only it is not abused and God is thereby glorified and mankind served. As we shall try to show, the modern theologian thinks that religion and science should not be in conflict, but that priest, prophet, and scientist should work together in harmony, each sticking to his appointed task, with none exceeding his limitations.

In this respect, the position of the Roman Catholic Church is clear, and in its theology there is provided a basis for such co-operation, because it is believed that man's natural God-given reasoning power forms, so to speak, a first story on which revelation and the powers entrusted to the hierarchy need only build. So scientist and philosopher always establish the bridge between reason and revelation, and all truth forms a harmonious whole. There is, therefore, no conflict between science and religion. There is to be co-operation between experts instead of the arrogance of isolated specialization. For the good of the whole, laborers, artists, priests, scientists, writers, and technicians should pool their abilities and the results of their labors.[14]

In an address to the Astronautical Federation in 1956 the Holy Father, the late Pope Pius XII, also expressed his approval of attempts to penetrate into outer space. He pointed out its moral aspects and warned against abuses, but also saw in it great possibilities for the furthering of brotherhood and world unity.

In a symposium published in the *National Council Outlook* in March, 1958, a dozen outstanding Americans expressed their reaction to the questions:

(1) "Will man's conquest of outer space . . . strengthen or weaken religious faith? Will it lead to religious revival—or to all-out worship of science minus God?

(2) Russian science, under a godless regime, has apparently outstripped U. S. science in development of some super-destructive weapons, including now the possibility of controlling the fate of nations through control of outer space. (a) How does the Christian face up to this threat to his security without succumbing to hysteria,

to fear of the future? (b) What lies ahead for Christians and their churches to do?"[15]

The answers show that this advance of science is regarded as putting man squarely before the decision, as to what use he will now make of his new-found power. By some it was hailed as something that could lead men closer to God and strengthen their faith, if only they would work out the proper relation between the achievements of science and the witness of faith. By none was the situation regarded as hopeless. Man's advance into space is not, as such, contrary to God's will. It may lead to many blessings for the human race along with the other advances of science. On the other hand, it may lead man to further pretensions to power that are sure to end in fearful judgment. Which it will be, only time will tell. The advances which Russia has made under a godless regime are not to lead to hysteria and fear. The Christian has faith in the incarnation and God's own intervention in history. He has faith in the resurrection, and that God will bring the whole creation to its fulfillment. He, therefore, faces the future unafraid, sure of the eventual outcome, but at the same time prepared for the continuing tragedies of life. He will work constructively for peace and the ending of the armaments race. The sole justification for defense expenditures is to prevent aggression and so win time in which to wage peace. While most of the reactions to this kind of thinking are sane and hopeful, there are still some people who are appalled. Their cry is "blasphemy." At last, man has gone too far, and the same God who once confounded and scattered the builders of the Tower of Babel, which they thought would reach into heaven and make a name for them upon earth, will cut man down to size. Man's place is on the earth which he was told to cultivate and replenish, and not to despoil so that he can go gallivanting off on a joy ride into space.

Quite apart from those who have naïve notions of trespassing on God's domain there are those who have a genuine concern. The trek into outer space does not automatically justify itself. Is it right that, while we have not yet been able to solve our human problems here upon this earth, we should be putting our best talent and energy and immense fortunes into fanciful space explorations? While millions continue to starve for want of food, millions suffer needlessly from want of medical care, and millions more vegetate out their meaningless lives for want of education and the development of their latent capacities, what justifies these luxuries of adventure? The cost of the launching of one satellite might provide the necessary research for the discovery of the cure of cancer. Does man's insatiable curiosity, his lust for adventure, his disinterested search for knowledge for its own sake, does this justify these ventures?

Or are there more pragmatic justifications for space exploration? Are we depleting our natural resources at such a rate that, with the vast yearly increase in population due to better methods of sanitation, medical care, decrease in infant mortality, increase of the life span, better housing and feeding, and elimination of epidemics, we shall soon be at the end of our rope? It is said that if all the people of the world were to live at the standard of living of the average American, all our natural resources would be gone in a few years unless new sources were discovered. Do not economic considerations, then, justify the advance into space? What has the Christian church to say about this?

When the problem of the ethical justification of space explorations is thus raised, we think inevitably of the fact that the Soviet Union, a godless nation, has outstripped the United States in the control of outer space. That country is organized in a totalitarian way, with a scientifically planned economy and education, so that the benefits of science will be made available to all, without benefit of religion, which is regarded as superstition. What effect will this have? Will the voices that advocate a similar procedure in this country, gearing all resources, all education to the same end, that is, scientific proficiency with regard to nothing else, prevail?

Is there no lesson to be learned from this devotion to putting science to work to give a richer life to all? After all, God does not rain pennies from heaven. The only miracles that have benefited mankind, fed the multitudes, made the deaf hear, the blind see, the lame walk, and even brought back the dead to life, are the so-called miracles of science. The scientist does not conjure and implore and once in a blue moon come up with this or that isolated cure in answer to prayer. He doesn't stop the plague by kissing icons. He stops it by the proper vaccine. He multiplies the loaves and the fishes with colloidal chemistry. He transplants corneas and makes the blind see. If the doctors and the funds were available, most of the blindness so prevalent in the Far East could be eradicated. What justification is there, then, for not putting all our eggs into this one basket?

How do we answer the Communist who points to the millions at present enslaved by our capitalist economy, the millions who are dying of starvation and disease—simply because of maldistribution of what is actually available—and who says that he is actually rendering mankind a service if he kills off a few thousand now in order to provide for a really better tomorrow? After all, the sacrifices he exacts are minimal compared to the millions who continue to be the victims of bungling inefficiency. These, too, are questions that must be dealt with in the face of increasingly beguiling Communist propaganda.

In the light of the situation as described, we propose to deal with the following questions:

(1) What is the relation between science and religion? Are they compatible? Can they work hand in hand? Is religion just the realm of superstition and ignorance which the advance of science is more and more dispelling? Or are these two realms apart, so that a man must compartmentalize himself and live his active life in the world of science, while on occasion he retires into solitude to contemplate the changeless and enduring spiritual attributes of life. The real problem arises within man himself when he must at the same time be the man of science who trusts only what he can prove, and also the man of faith who must let go completely of that which he controls and cast himself in faith utterly upon God. The conflict is, therefore, not between two classes of people, the hard-boiled, realistic scientists and the soft-hearted, idealistic religious devotees. The conflict is between two conflicting claims upon a man's devotion. The contradiction works its havoc within the soul of every honest, thinking individual. How does the Christian specifically—not just the religious man, who may allow the scientific task to claim his highest devotion—deal with this dilemma? How can he serve two masters when Jesus said this was impossible? (*See* Matt. 6:24.)

(2) Will men discover God and heaven in outer space? Will space explorers come upon the abode of God and the souls of the blessed departed, to say nothing of the damned? This raises the whole question of Biblical cosmology as compared with ours. It raises questions as

to the nature of God as spirit and of what is meant by God's "absolute otherness." It also raises the question of man as spirit. What about the immortality of the soul as against the resurrection of the body? Where do we look for those who have passed on?

(3) What if there are other living beings in space? How does this affect traditional Christian theology, of a God who became incarnate on this earth and atoned for all the sins of the world? If there were an historic fall, with dire results for all humanity and even the cosmos, what effect does this have upon other possible living beings? Are they, too, affected by this fall, and was the atonement of Christ efficacious for them? It is conceivable, at least, that beings in outer space should have totally different philosophical and religious beliefs. Their mode of thinking might be quite different, making intelligent communication difficult if not impossible. What would we do then? Or if we could communicate, would we try to convert them to our ways of thinking and beliefs? It is possible that they are unfallen creatures and far superior to us intellectually, morally, and spiritually. Perhaps they are in a higher stage of evolution. How would we react if they sent missionaries to us?

A final question would concern the outcome of all history. The Bible speaks of the resurrection of the dead and a new heaven and a new earth. Particularly in our day there is talk of a cosmic redemption. How will this affect a universe as vast as ours?

(4) To whom will the planets and the airways belong? Already, there are motions at the top level of jurisprudence to begin to draft interplanetary law. Will the church have any advice to give as to how the new spoils that are waiting for conquest are to be divided? Can we, by drafting laws in advance, avoid some of the

evils of conquest, exploitation, and colonialism that mar the history of our planet? Will the moon be claimed by the nation that first plants its flag upon it or will it remain the possession of all lovers the world around? Will space travel make for peace, or will it only make for more unbelievably destructive interplanetary holocausts? What of even such a modest success as a space platform revolving around our earth from which everything could be observed and from which weapons of wholesale annihilation could be launched on any target? Would this at last drive men, out of self-preservation, to give up international warfare? Or would there still have to be an international police force to enforce international law and eventually an interplanetary police to enforce interplanetary law?

To some, all these questions may seem idle and the discussion of them a waste of time. Why cross all these bridges before we get to them? It's true enough; there will always be plenty of new bridges to cross upon which it is useless to speculate now. They will come unquestionably as complete surprises. This is part of our human predicament, that we cannot make sure predictions about what the future will bring. But this is no reason for not being prepared where it is possible. Space travel is in prospect and the questions people are asking must be answered.

Chapter 2

CONCERNING THE RELATION BETWEEN SCIENCE AND RELIGION—I

THE advent of the space age, with all its implications for the future, is only the dramatic climax of the road which science has been traveling for many years, and so it brings into sharp focus the place that science is to be given in our life in general, and its relation to religion and the Christian church in particular. A man cannot live a schizophrenic existence, in the laboratory and in his everyday life, depending upon scientific method, and then on Sundays and whenever he says his prayers, somehow shifting gears. There must be not just a working truce but a reasonable unification into a meaningful whole, even if this includes many an irrational, given fact which we fail to understand, but which does, nevertheless, exist.

The Warfare Between Science and Theology

There is a long history of the warfare between science and theology. This presents us with a pugnacious problem. Prophet, priest, and scientist have not always seen eye to eye nor pulled together very well under a common yoke.

Whenever there was a new discovery which went counter to the traditional beliefs, the church and its leaders were quick to protest. Puny man was presuming to know more than God. He was getting too big for his britches. He was once more building the Tower of Babel to rival God and make a name for himself on the earth.

As the Middle Ages drew to a close, the Roman Catholic Church tried and convicted some of the proponents of the new world view of heresy. Giordano Bruno was burned at the stake in 1600 because he no longer believed in a finite, enclosed universe. Because he held space to be infinite, he could find in it no abode for God as a being separate from the world. He was condemned, therefore, not because he was an advocate of learning, but because he was a pantheist and held that God was immanent in, that is dwelling in the universe itself and in no way separable from the creation.

In 1632, Galileo was forced to recant his conviction that the earth revolved and not the sun, but he is said to have murmured under his breath after his recantation, "Nevertheless it moves." This shows how persistent is the drive toward truth and how impossible it is to force a man to change a conviction honestly arrived at. The only thing that can change a man's mind is persuasive counterevidence.

Churchmen have been suspicious of new views. Martin Luther did not think well of Copernicus for contradicting the cosmology of the Bible. So he said in the usual gruff fashion he used whenever addressing himself to one whom he considered the Lord's enemy, "People gave ear to an upstart astrologer who strove to show that the earth revolves, not the heavens or the firmament, the sun and the moon. Whoever wishes to appear clever must devise some new system, which of all systems is of course the very best. This fool wishes to reverse the entire system of astronomy; but sacred Scripture tells us that Joshua commanded the sun to stand still, and not the earth."[16]

Calvin also said, "Who will venture to place the authority of Copernicus above that of the Holy Spirit?"[17] and continued, "The world also is stablished that it cannot be moved." Ps. 93:1. It was also under Calvin's regime that Michael Servetus, who anticipated the discovery of the circulation of the blood, was convicted of heresy and burned to death in Geneva in 1553. Again, it was not because of his scientific views, but because he denied the traditional doctrine of the Trinity. In the eighteenth century, John Wesley held that the new views of the universe tend toward infidelity.

It is also common knowledge that the church opposed other scientific innovations which it believed to be counter to God's word, such as inoculation, anesthesia, birth control, and above all, the theory of evolution. It is said that one divine finally found Biblical sanction for the use of anesthesia in childbirth by citing the fact that God himself caused a deep sleep to fall on Adam when he operated on his rib to produce Eve. There were repeated witch-hunts, and the last burning in Scotland was as late as 1731 and in France, 1718. In New England, there was a great rash of witch-hunts at the end of the seventeenth century.

So almost every advance of science had to win its way against the opposition of the church, but we must be fair to both sides of the issue. The church and the theologians were concerned with defending God's sovereignty and the truth of God's revelation. It was not always just fanatical opposition to all innovation; but there were genuine issues at stake, as in the case of Giordano Bruno and his pantheism, Servetus and his denial of the Trinity, and in the assertion of a chance evolution and only a quantitative instead of a qualitative difference between man and the animal. The trouble lay in the fact that neither the church nor the scientist always recognized their own limitations.

We should not forget, either, the fact that most, if not all, of the great scientists through the years have been devout members of the church, quite willing to bow to the authority of the church in matters of their soul's salvation, provided only they were left free to investigate in their own realm. The common notion that all scientists are godless is false. Many of them intended only to glorify God and to help mankind by their studies. To mention only a few: Copernicus was a canon of the Roman Church; Galileo was a devout Roman Catholic; Kepler was a Christian mystic. Robert Boyle aspired to the Christian ministry, but considered himself unworthy; Isaac Newton was an Aryan Christian; Joseph Priestley was a devout Unitarian; Michael Faraday was a devout member of a small evangelical sect; Arthur Eddington was a convinced Quaker; Louis Pasteur's Christian faith was the spur to his scientific activity.[18]

When the British Royal Society was founded in 1645, it was stated by Sprat, its first historian: "I do here in the beginning most sincerely declare that if this design [of a Royal Society] should in the least diminish the reverence that is due to the doctrine of Jesus Christ, it were so far from deserving protection that it ought to be abhorred by all the politic and prudent, as well as by the devout part of Christendom."[19]

The debt which the development of the scientific method owes to Christianity in general should also be acknowledged. It was not until Christianity had made clear the distinction between Creator and creature and rid the world of demons which capriciously interfered with ordered events, that science became possible. A dependable, ordered nature is the precondition of all purposeful, spiritual life.[20]

Above all, if there is to be a proper scientific control, God himself must be excluded from the world that man gets under his control. The world of nature, man can control, but not the God who made it. Pantheism, and in fact all monistic views, have a fatal inconsistency. Purpose, plan, responsibility, both human and divine, are impossible except on the basis of a real dualism, not of matter and spirit, but of Creator and creature.

How to Reconcile Science and Religion?

How then shall we go about reconciling science and religion? Socrates, the gadfly of Athens, the despair of his shrewish wife, Xantippe, was declared by the oracle at Delphi to be the wisest of men. To test the oracle, Socrates went back to his old haunts in the market place of Athens and continued his disconcerting game of questioning all whom he could buttonhole by the lapels of their togas. In the course of his questionings he discovered that almost everyone knew more than he did about something or other. The shipbuilder knew more about shipbuilding, the cobbler knew more about cobbling, the horsemen knew more about horses, the lute player knew more about "luting," the orator knew more about the art of persuasion and of making the worse appear the better cause, the statesman knew more about governing wisely, the warrior knew more about the "noble" art of slaughtering and putting to rout the enemy, the wrestler knew more fantastic holds than even Socrates' vivid imagination could conjure up, the housewife knew more about folding diapers and getting a hot meal on the table in between whatever was the equivalent of today's bridge game. In short, the infallible oracle seemed at last to have toppled from its throne: everyone was wiser than Socrates.

But then came the vindication. The ambiguous statements of the oracle could never prove false. When King Croesus asked the oracle whether he should make war on King Cyrus, he was told that a great empire would be destroyed if he did. And so it was; but not the empire that Croesus expected it would be. So also in Socrates' case there was a hitch in the oracle's ambiguous wisdom. As Socrates did his questioning, he discovered one fatal flaw in the wisdom of all those who knew more than he did in some special area of concern. Every expert in some specialty also made pretensions beyond the area of his competence. When the politician went to the races or the wrestling matches, he pretended also to be an expert judge of horseflesh, and to hear him extol his favorite grunter and groaner you would think that he was himself the champion wrestler of the Peloponnesus, with his skinny legs and stringy muscles. Whenever the artisans gathered in the market place, everyone knew all the answers as they discussed the latest tragedy or comedy, the latest fad in "schoolteaching," the state of the nation, the progress of the defensive war, the high price of perfumes, the state of morals and religion, and just who was responsible for corrupting the youth of Athens.

So each one in his own foolish way betrayed his ignorance, simply because he did not recognize the limitations of his competence. Because he was expert in one thing, he presumed to be expert in all. Because one method worked in one area, he supposed that it would do to solve all problems. Because the best way to get a donkey's attention was to beat him over the head, he applied this method universally. Because the oarsmen moved forward while facing to the rear, he supposed that this was also the way to ride down the *chaussée* in a chariot. Because absolutely certain knowledge came to him when he related his ideas to one another in perfect and indisputable clarity, he supposed that this was the only avenue to truth. Truth was attained only by clear thinking in abstraction from all the messed-up contradictions of life. When people worshiped the gods of the Olympus and the personified forces of nature because a surge of emotion overwhelmed them at the sight of the sunset or at the patter of the rain after the drought of summer, then this was all dismissed as superstition. The philosopher and not the priest was to be king. While, for his part, the priest had his pretensions, too. Nothing would succeed if the omens were not favorable. Everything depended on the shape of the kidney and the size of the bladder the sacrificing priest held in his bloody hands. Even the sun would not rise if the priest did not perform the right sacrifice. The priest held the keys to the kingdom not only of this world but also of the next. Pretension to knowledge meant pretension to power and this meant corruption, for the oft-quoted dictum was as true then as it is now: "All power corrupts and absolute power corrupts absolutely."

The Proper Recognition of Limitations

So Socrates came to the conclusion that the oracle was correct after all. He alone of all men was wise in the knowledge of his ignorance and his lack of pretensions to power over men. He alone knew his limitations. He alone knew that he did not know and did not pretend to knowledge when all he possessed was opinion, hearsay, or the flimsiest kind of evidence. He knew both the values and the dangers of specialization. He knew the bane of the limited perspective. He knew that what worked in one area would probably get a person horribly fouled up in another. He himself had once been enamored of mathematics and astronomy and of all the so-called objective sciences, where a man looks away from himself at the world and the solid facts about him and lets them correct his own wayward desire of how he would like things to be. But then he discovered that this did not solve the riddle that man was to himself; it did not solve the inner contradictions of his being; it did not still the restless longing of his heart or take away life's loneliness, or silence the cries of an aroused conscience. So he turned, as he says, from the study of the numbers and the stars to the study of man himself, and he made his motto, "know thyself," because he was convinced that all truth was within every individual. This is why he derided the Sophists who pretended to teach men wisdom and charged tremendous fees for their fulminations. He himself would not charge a sou for his services. His mother was a midwife, and he himself proposed to follow her profession. He compared himself to a midwife assisting at the birth of ideas when the prodigiously pregnant youth of Athens came to him in their birth pangs. With his subtle questioning, he helped along the labor and then he examined the progeny to see whether it was just a wind egg or something more substantial. So he felt that every teacher should be humble before his pupils and only help them to develop their own inner capacities. These ideas he held to be sufficient to solve all man's problems. To know yourself properly was in the end to know God and all things. Within man himself lay the answer, and life's great adventure was the search for the truth within; and even if the answers were not always found, Socrates felt that there was still the glory of the quest.

". . . Some things I have said of which I am not altogether confident. But that we shall be better and braver and less helpless if we think that we ought to inquire, than we should have been if we indulged in the idle fancy that there was no knowing and no use in searching after what we know not;—that is a theme upon which I am ready to fight, in word and deed, to the utmost of my power."[21]

The Truth Is Within the Learner

So now we seem to have arrived at a contradiction. Socrates began by saying that everyone should recognize his limitations and that only he who knows that he does not know is wise. Then he concludes by saying that after all, everyone knows everything because all the truth is always within every learner himself. While this seems to be a contradiction, there is a resolution of it, and it is this resolution which should also help us toward the resolution of our problems concerning the relation between science and religion. It is still true that Socrates held that everyone should know his limitations and that true wisdom consists in the knowledge of ignorance. Nevertheless, this does not preclude the possibility that with the proper training, everyone should be able to arrive at the truth that matters. Socrates was not interested in just knowledge, for that, after all, is an abstraction. What he was interested in was the good life. The question concerning knowledge was for him always the question concerning the good. To know the good was the same as to do it, for Socrates held it impossible that anyone should really know the good and yet act in contradiction to it.

This is the Socratic presupposition with which we must come to terms, for it will have everything to do with how we solve the problem of the relation between science and religion and a proper division of labor. Does this square with the facts or does it reveal a far too optimistic view of human nature? Does it underestimate the radicalness of evil in the world? Is evil always just the result of ignorance, and does to know the good mean to do the good? Does all the truth lie within the learner, and is all that is necessary for this truth to be brought to birth the right maieutic process, that is the proper midwifery? Or is there something else necessary? Perhaps, after all, man's real problem in his existence is not solved when he goes within himself, and, so to speak, communes with himself. Perhaps the solution to life's problems is not in this kind of intellectual navel staring.

Help From the Gods

While the ancient Greek philosophers played at their intellectual game of chess, the people still crowded to the theaters where the part the capricious gods and the inscrutable fates played in the lives of men was so vividly portrayed, reflecting the comedy and tragedy of life itself. In addition, all of them took part in the so-called "mysteries." These were, in part at least, joyous nature festivals in which everyone rejoiced over the return of spring and the changing seasons of the year, each with its own peculiar charm. The word, mystery, comes from the Greek word *muo*, which means, to shut the mouth, as you do when you pronounce the letter M. In the mystery, therefore, a man was reduced to silence before an ineffable experience. As in the tragedies on the stage, he became aware of his basic dependence upon powers, both good and evil, which, try as he would, he could not control. So the solution to his real problem did not come from self-communing. It came only when help came from another, when the god himself appeared in the cleft of the rock or at the side of the fountain.

Man's Struggles for Survival

Here lies the answer concerning the relation between science and religion. There are many problems that man can solve with the aid of a midwife as he gives birth to that which lies within him. It is true that the whole drama of man's struggle for survival against the forces of nature and his rise from barbarism and helplessness before storm and disease and death is due exactly to that kind of discovery of truth within. Only because man has the innate capacity to think, to frame universals by abstracting from the particular, to count, to draw geometrical figures, to make inductions and deductions, has he risen above the fox, his brother in cunning, and the tiger, his rival in ferocity. All animals are guided by their instincts and, apart from that, they are utter idiots. The lower in the scale of life an animal, the more specialized it is; for example, the bee, which builds its beautifully symmetrical honeycombs always in the same way, and goes through its routine of honey-making without long lessons from the teacher of honey-making. But the more specialization an animal acquires, the more dependent it is upon the vagaries of environment. Man alone is not hampered by instincts. He is free to develop himself in almost any direction. The little monkey is independent of his mother almost as soon as he leaves the womb, and there is no long period of schooling for him.

But the human child must be taught everything he knows. Slowly through the years, that which is latent in him must be drawn out and developed. But it is precisely this which gives him his flexibility, as the powers that make him the crown of creation and only a little lower than the angels are developed. Man, created in the image of God, stands a qualitative leap above the animals. Part of what this means is his power of reasoning, and with it to conquer the earth and subdue it. (*See* Gen. 1:28.) It was a great day in the history of mankind when man made his first abstraction, and instead of dealing only with this particular tree and that particular animal and that particular woman, began to think in terms of trees and animals and women as a class. What he did was to abstract, that is, to take away from all the many particular trees that which they all had in common and to form the universal tree. From the many particular women of his acquaintance, he abstracted that grace of form and figure which distinguished them from the members of the opposite sex, and he called it "woman." He learned to count, and it was a great day when he ascertained the knowledge that one plus one is two, and that this is a truth quite independent of adding one apple to another apple and getting applesauce, instead of two apples. Here we can see most clearly what is involved in abstraction from actual existing things. Numbers and their relations, geometrical figures, perfect squares and circles and triangles exist in their perfection nowhere in the actual realm of things. A mathematical point occupies no space, and a line has no width whatsoever. These are all abstractions of the mind, and yet with them man is able to make himself master of the actual things in the world. The grocer can count out his apples and try to reconcile the actual number of apples in the bag with the unchanging, eternal numbers that he "knows" with his mind. He can be mistaken in his count and he can count over and over again, but he can never have the same absolute certainty that he has not miscounted, as he has of the number with which he is trying to make the apples agree.

This, at the same time, gives us the notion of absolute certainty, or apodictic certainty as it is also called, because it cannot be contradicted. No one can deny that two times two is four, unless he means something else by it. This is the notion of self-evidence. The evidence for the truth of the number relations lies in themselves alone. He who has the rational power to form the number concepts need only look at them to see that they are what they are and could not be otherwise. It is not possible that two plus two should be anything else but four. This fact exhausts the possibilities. Of course, if you add two things to two things, that is a different matter, and you can never be sure what you will get. Two quarts of liquid added to two other quarts may end up in a profusion of quarts, just as boiling rice can overflow into the whole kitchen, or other combinations may end up in a tremendous explosion and an expensive funeral. The possibilities of adding two things to two things are not exhausted by the number four, but the relation between the abstract number two plus the abstract number two is definitely exhausted in that one possibility of the abstract number four.

This is man's power of abstract thought, and it is a tremendous gain because it frees him from the particular and enables him to generalize and thus to soar in his imagination to the most distant realms. It makes him creative and marks the beginning of his conquest of nature. It is the beginning of what we today call science, although we ought to be much more exact and call it natural science, that is, the science which has to do with what we ordinarily call nature, all the things and animals and forces about us that man can manipulate and make to serve his purposes. How far this sphere extends—that is just the point in question, and we shall have to deal with it later.

Of course, this business of abstracting from the particular also involves a great loss. It is no longer this particular Mary Brown, with uniquely raised eyebrow and inimitable "unbaptized movements," and the whispered words that are meant for only one person in the world to hear, but it is just "woman in general," of which there are a million and more instances. No one wants a "woman in general," but each one wants his particular Eve, even though she falls far short of the perfection of beauty.

The Power of Induction and Deduction

With the power to abstract and formulate universals went also the power of induction and deduction. By induction is meant the ability to go from the many particulars to the universal, or from many instances of a phenomenon to a generalization. The philosophers today are not agreed on just how this phenomenon is accomplished and what degree of certainty attaches to generalizations, but about the phenomenon and its benefit to mankind there is little doubt. Because the sun has for innumerable years risen in the east and set in the west and there have been no instances to the contrary, the generalization is made that the sun always rises in the east and sets in the west. Because water boils at a certain temperature under the same atmospheric conditions, it is concluded that it will always do so and that there are no exceptions to this so-called "law of nature." But we should be able to see that this is not a self-evident proposition. Saying that the sun will rise in the east does not exhaust the possibilities. There are three other points of the compass from which it could also rise, and then there is also the possibility that it should not rise at all, or that some day it should come up black as pitch and burned to a cinder, instead of shining all golden in its splendor. So the best you can get for any induction of this kind is a high degree of probability, high enough to make you wager a considerable amount but hardly high enough to make you stake your life on it.

There is a different kind of certainty connected with deduction. Every valid deduction is absolutely certain as a deduction from the given premises. If all men are mortal and Socrates is a man, then it is a valid deduction to conclude that Socrates is mortal. The generalization, however, that all men are mortal is not absolutely certain. It has only a high degree of probability, since it is not self-evident and does not exhaust either the possibilities or the instances. Even if all men in the past have died, this does not absolutely exclude the possibility that some day the fountain of youth and of immortality may be discovered. Some day some Siegfried may slay the fabulous dragon and bathe in his blood and make himself impervious to death without having any spot into which a treacherous Hagen may plunge the fatal spear. This always remains as a possibility, however unlikely. The generalization that all men are mortal is an induction from the particular instances to the universal and is highly probable, in view of the fact that there are no negative instances; while the deduction itself is absolutely certain from the universal to the particular. If there are two concentric circles, the one smaller than the other and contained within it, and there is a fly in the smaller circle, then it is absolutely certain that the fly will also be contained within the larger circle. This is only one instance of a valid deduction such as we are constantly making, and without which orderly thought would be impossible. All this is part of man's native equipment and it has enabled him to make all the progress he has made. Some truths are given to men by what we may call insight or intuition. He sees into them because he has the kind of mind he has. We may call these *truths of the reason* because they concern the ideas which man has and their relations to each other. Other truths come to man only slowly, on the basis of observation and experience, and it is through a combination of these two, the insights of the reason and the results of observation of experience, that man builds up his fund of knowledge. Whatever knowledge is gathered in this fashion we may call science, or *scientia*, from the Latin word *scio*, which means "I know." This is then a much broader term than we are accustomed to when we speak of science today and mean what the English schoolboy calls "stinks," that is, chemistry or any other of the natural sciences based as they are on the insights of mathematics plus careful observation and experiment.

The Development of Modern Science

It has been only since about the year 1600 that man has been making the phenomenal progress in his knowledge of the world about him and in his control of the forces of nature that has culminated today in the splitting of the atom and the advance into outer space. It was then that the so-called method of induction, based on observation and experimentation, was more fully developed, and discovery followed upon discovery because men ceased relying upon authority and given premises, and accepted nothing that they could not verify for themselves and press into some useful service. Prior to that time there had, of course, been much learning, and the foundations of the scientific method already had been laid by Aristotle, who was as keen an observer of nature as ever lived. Nevertheless, tradition and the authority of the church stifled progress and fresh venture into the truth. Men usually proceeded by deduction from given premises rather than by induction from the observed facts to the generalizations. The authority of the church and of the Bible went for the most part unquestioned, and if observed facts contradicted the Bible, then the Bible won out.

There has been told what is probably an apocryphal story of the learned doctors deducing the number of teeth in a horse's mouth from some fantastic premise, and no one questioned their deduction until the stableboy came along, opened the horse's mouth, and counted the teeth, and so got it "straight from the horse's mouth." Francis Bacon was the great spokesman for the new method of induction. He compared the method of deduction to that of the spider which spins its web all out of itself, while the method of induction he compared to that of the bee which flits from flower to flower and so gathers its store of honey. So it was stated that there must be seven planets because seven is the number of perfection, as there are seven golden candlesticks and seven letters to the churches in the Book of Revelation. The astronomer, however, learns the number of the planets from his actual observation of the heavens.

It was, then, from about 1600 and on that the method of the natural sciences was more and more carefully developed, until today it has been developed into an almost foolproof method, and there is in the hands of men an almost infallible method of prediction and control. For this is what the method of the natural sciences is, a method of prediction and control which increases man's power, enables him to overcome his insecurity, makes him less the victim of his environment and caprice. But, as we have already said, to call this method simply a matter of induction that begins without presuppositions, with nothing but the facts, would be a great mistake. The method of the natural sciences involves both deduction and induction and is never without accepted presuppositions which are themselves not capable of proof.

The Presuppositions of the Method of the Natural Sciences

For one thing, there is the acceptance of all mathematical relations and the belief that they apply to the given world of things. As we have already tried to state, these truths of mathematics are really based on insight. However true it may be that men first learned to count by actually manipulating their fingers and their toes or by proceeding from one object to another, the insights of mathematics, once gained, stayed with them as indubitable, and only by means of them were men able to continue their progress.

Furthermore, they presupposed the orderliness of nature and a strict cause and effect sequence. Nothing in the world of nature happened by chance, but only through the operation of a cause. Every event was a link in an interminable chain, linked to the event that preceded it as the effect to the cause and in turn linked to the event that followed it as the cause to the effect. Every happening thus played a dual role as both cause and effect. The acceptance of this kind of determined order was quite a shock to devout believers who thought of this as their Father's world in which no sparrow falls without his will, who believed in miracles, in divine interventions, in answers to prayer. And it was not only the devout believers who found it hard to believe in this kind of determinism, but also others who believed in human freedom and responsibility.

The philosopher Kant spent a lifetime in vindication of the fact of man's freedom of decision and his responsibility for that decision in the face of the inviolable order of nature. Two things, he said, filled him with unutterable awe, the starry skies above and the moral law within. By the starry sky above he did not mean just the torch-lit heavens as they delighted lovers the world around, but he meant the inviolable order of nature according to which the stars return in their courses, after millions of years, with split-second precision. What room is there for freedom of decision and action in such a world? And yet every man feels in himself the pull of obligation, of duty, of responsibility, of that "ought" which lays a burden upon him that, try as he may, he cannot throw off. But this feeling of ought requires freedom or it would make no sense, and an unfree, determined being would scarcely feel in himself such an imperious pull. The idea implied in "I ought" is that "I can."

This is not the place to discuss the ingenious way in which Kant tried to reconcile the observed, inviolable order of nature with the observed fact of responsibility and freedom. It is recognized as one of the great achievements of human thought and still has its adherents today. The point is simply that men were presented with a real problem, not only for their faith in the Bible and in God, but for their belief in human dignity and responsibility, once they accepted the premise of an ordered world in which there is no room for freedom. Yet this presupposition of the orderliness of nature and of a cause and effect sequence remains the necessary presupposition of all the natural sciences, and without it no natural scientist can operate. He can perform no experiment, conduct no research, make no predictions, exercise no control if he does not assume this order. No chemist developing a new plastic, no biochemist developing a new vaccine, no doctor performing an operation, no engineer building a bridge, no farmer sowing his seed and crossbreeding his cattle, no housewife baking a cake, no barefoot boy spinning his top can accomplish anything, except as they all rely on this order.

Later on, we shall have something to say about Heisenberg's so-called principle of indeterminacy and of the humility with which the scientists view their generalizations as being nothing but statistical averages and never indubitably certain. Now it is enough to assert that every working scientist, and in fact every human being, begins with and operates with the presupposition of an inviolable and dependable order, and we are constantly making deductions from our assumptions and hypotheses.

The Method of the Natural Sciences

On the basis of these presuppositions, we can then state what is peculiar about the method of the natural sciences. But we cannot do this either, unless we recognize that what distinguishes the scientist is, first of all, not so much a method as it is a spirit, an attitude, a total orientation toward life. It is this idea that J. B. Conant develops so well in, *On Understanding Science*,[22] in which he points out that the rise of the scientific attitude was due not primarily to the actual practitioners of science, but to men who disciplined their minds in the pursuit of knowledge, who insisted on the most careful distinctions, and who, like Socrates before them, made the distinction, above all, between what they knew and what they did not know. They were not the actual experimenters and inventors who passed on to succeeding generations much useful information, but they were the ones who had new ideas that were fruitful in the search for truth. Such men were not just interested in nature, in things, but in man himself, and in truth for its own sake. They were the ones who went in pursuit of the facts, without prejudice, in all areas of inquiry and were willing to stick by these facts without fear.

Now the preliminary definition of science which Conant gives is a much more inclusive one, and at the same time a narrower one than the one generally given. It has to do with the disinterested search for truth through the power of the human mind, and it becomes fruitful wherever, on the basis of careful attention to and observation of all the facts, the mind produces new concepts and ideas. Conant writes, "As a first approximation [that is, to a definition], we may say that science emerges from the other progressive activities of man to the extent that new concepts arise from experiments and observations. The case histories drawn from the last three hundred years show examples of fruitful and fruitless concepts. The texture of modern science is the result of the interweaving of the fruitful concepts. The test of a new idea is therefore not only its success in correlating the then-known facts, but much more its success or failure in stimulating further experimentation or observation which in turn is fruitful. This dynamic quality of science viewed not as a practical undertaking but as development of conceptual schemes seems to me to be close to the heart of the best definition."[23]

With this definition we can contrast that of Bertrand Russell: "Science is the attempt to discover, by means of observation, and reasoning based upon it, first, particular facts about the world, and then laws connecting facts with one another and (in fortunate cases) making it possible to predict future occurrences. Connected with this theoretical aspect of science there is scientific technique, which utilizes scientific knowledge to produce comforts and luxuries that were impossible, or at least much more expensive in a pre-scientific age."[24]

John Dewey is quite explicit in restricting the road to truth to the scientific method. "The mind of man is being habituated to a new method and ideal: There is but one sure road of access to truth—the road of patient, cooperative inquiry operating by means of observation, experiment, record and controlled reflection."[25]

It makes no difference at this point whether we accept Conant's definition, which puts the emphasis on fruitful concepts, or the other definitions which put the emphasis on the actual method employed in arriving at valid generalizations, in which fruitful concepts certainly play a vital part. In either case, the ultimate outcome is a greater control over his destiny on the part of man. According to Conant, this is not the conscious concern. The true scientist is interested only in knowing. The power of control which this gives him is secondary to this distinterested search.

According to Dewey, however, all thinking is problem solving, and man is always intent on overcoming some limitation. The only way to do this is to follow, step for step, the method that has proved successful in the natural sciences. This method must be extended to all the sciences if they are worth the name. If they cannot describe accurately, state causes, make predictions, and so exercise control, then they are not scientists, but philosophers or poets or prophets. This would apply to the sciences involving human beings as well as to those dealing with the subhuman.

Whatever still needs to be said about the limitations of this method of the natural sciences, there can be no question about what it is to lead to: the kind of prediction and control that is exercised in physics and chemistry. Meteorology is an exact science to the extent that it can predict and control the weather, warn against hurricanes, break these up or send them scurrying. Psychology is an exact science to the extent that it can predict behavior and so weed out the pilots who will crack up, predict incompatible marriages, or cure maladjustments. Sociology is an exact science only insofar as it gives insight into group behavior, social trends, and the like, so that evils can be guarded against and desirable ends achieved.

Granting then that science is more than a method, that it is a spirit of inquiry, that it is at best a disinterested passion for the truth, that it depends upon the fruitfulness of the concepts which it develops, there is, nevertheless, a scientific method which can be successfully employed in the giant laboratories of today where many thousands are working on the same problem. This method is, sooner or later, assured of success.

The method may briefly be described as follows: First of all, there must, of course, be a felt difficulty, which must be precisely located and defined. In other words, the problem under investigation must be clearly stated and limited. The next step is the gathering of relevant facts, and this implies some knowledge and some hypotheses; that is, guesses of what may and may not be relevant. So this is practically inseparable from the next step which is the setting up of possible solutions. It is here, especially, that deductive reasoning takes place and that the uniformity of nature is assumed. The reasoning is simple: if p then q. If the bite of the Anopheles mosquito is the cause of malaria, then the malaria occurs only where there are those mosquitoes. If the mosquito can be eliminated, then malaria can be eliminated. This assumes the causal connection and the uniformity of nature, and the trick is, of course, really to establish the causal connection by controlled experimentation and verification.

The most common fallacy at this point is that of *post hoc, ergo propter hoc*, "after this, therefore on account of this." The rustic who sees the girl kiss her soldier boy good-by at the train window just as the train starts moving supposes that it is this potent blast which sends the train catapulting. All primitive magic is based on the assumption that there is a causal connection between the mumbled incantation and that which follows. The hunter who relies on his tried and tested knowledge, the bow and the arrow fashioned perfectly after many a trial and error and a few fortunate flashes of insight, the lairs and habits of his prey carefully observed, nevertheless recognizes some factors over which he has no control. There are too many variables. The best arrow, most carefully aimed, from the tautest bow, at precisely the right moment, nevertheless fails to reach its mark, for in that split second the protective God whispers a warning into the ear of the deer, and it drops its head. These are the factors the hunter hopes to control with his magic, his charm, his mumbo jumbo. Once it worked, *post hoc, ergo propter hoc*, so he will take chances. Not so the scientist, who must carefully verify his hypotheses, and under controlled experimentation reassure himself that he really is in control. The Salk vaccine was not put into use until—as far as was humanly possible—it had been established that it worked and that there would be no deleterious effects.

It is at the point of the setting up of hypotheses that the flash of insight as to a possible solution is so important. In giant laboratories it is largely a matter of continued trial and error, and the company that can afford the biggest laboratories and perform the most experiments is likely to come up first with the best plastic. Nevertheless, this by no means eliminates the sudden flash of insight. Here the difference between the brilliant genius who, as the word indicates, has an inborn capacity beyond that of others, and the ordinary hack comes in. While it may be true that "inspiration is ninety-nine per cent perspiration," there nevertheless is the factor of the given capacity which man does not control. There is also that other intangible, the will, the desire, the drive to know or to serve, which is not under control.

The Limitations of the Scientific Method

The flash of insight, the gift of genius, the push of the will, therefore, remain as uncontrolled and, we believe, uncontrollable factors, and this will have an important bearing on the conclusions at which we shall ultimately arrive. Granted that the aim of the scientist—in the narrow sense defined—is to make himself the master, either in just knowing for the sake of knowing, or in order that he may predict and control and so make his lot and that of his felow men more bearable, the big question remains whether or not there are not definite limits to this method. A view that sees no limits to the applicability of the scientific method and that regards it as the only avenue to truth we may designate as "scientism." Like all "isms," it fails to see the rich complexity of life, that there are more things 'twixt heaven and hell than men dream of in their philosophy. It tries to reduce everything to one simple system and insists fanatically that its truth is the only truth. This is the height of unwisdom, as we tried to show earlier by the reference to Socrates, the master of those who know, because he distinguished between what he knew and what he did not know.

There are others, therefore—and these are scientists themselves—who recognize that there are different levels of existence, different ways of arriving at truth, different kinds of truth. There is no one scientific method, but there are many, and a method appropriate in one area may not be appropriate at all in another. Therefore, a legitimate science is one which operates consciously within given presuppositions, with its own categories, and has its own aims. The natural scientist, therefore, cannot ever give up the method and the aim that are peculiar to him. His task is to manipulate. He stands, as we shall develop later, in an I-It relation to the objects with which he deals, and pushes them around. When he is, however, confronted by another person, another Thou, another center of decision and responsibility, then there is erected a holy "no trespassing sign." An angel with a flaming sword guards this sanctuary. Another person may never be manipulated as is a chemical in a pot, unless, of course, he is being treated so as to restore to him precisely that freedom of decision and responsibility which constitutes him a person.

So there are different levels within which one operates legitimately. If the Christian church begins with a divinely given revelation of God and then operates strictly within the given, employing those categories that are demanded by such given revelation, then the charge may not be made against it that it is unscientific. It is dealing precisely with matters which, in the very nature of the case, cannot be brought under human control, which cannot be verified experimentally, where no control situation can be set up. The causal connection between the words, "Thy sins are forgiven thee," and the actual forgiveness cannot be established. Moreover, cause and effect is the wrong category to employ in this relation. It is within the personal relation that the forgiveness takes place, setting up a new relation. Whether or not there is a life hereafter, in the sense of a final judgment, is in the very nature of the case not experimentally verifiable. There is, therefore, a realm—not set apart from the affairs of daily life, but most intimately tied up with them—the most distinguishing characteristic of which is that here man is not in control, but is himself under control. This is the realm of faith, of surrender to God, of obedience, of acceptance of what God has to offer.

When we are, therefore, speaking of the relation between science and religion, it is, from this viewpoint perverse to defend *all* religions. "Religion" may mean the grossest superstition, and be quite incompatible with the assured findings of scientific investigations. Christianity, with its gospel of the God who comes to men as the gracious God, in Jesus the Christ, means to put an end to all the religions in which men try to work themselves into the right God-relation. The story of the religions of the world is the story of man's aberrations, misunderstandings, and confusions with respect to the true God as he is revealed in the Bible. This is, of course, a most presumptuous affirmation of faith. But so be it! All religion which means to manipulate God, or whatever supernatural powers there are believed to be, instead of surrendering to the will and promise of a God of love, is idolatry. The Christian religion means to supplant, to correct radically and fulfill all other religions, and not just to supplement them with further insights. A religion which means to put man in control, in matters of ultimate concern, comes under the judgment of the Christian proclamation, and so does science itself, if it becomes a religion, and means to give man control of his ultimate destiny.

Again it is, therefore, a matter of a proper evaluation and a proper division of labor between scientist and priest, each sticking to his appointed task. As a matter of fact, there has been such a change in the whole scientific outlook that the way is opened to a harmonious cooperation.

Chapter 3

CONCERNING THE RELATION BETWEEN SCIENCE AND RELIGION—II

The Change in the Natural Sciences

A MOST significant change has taken place in the realm of science in the twentieth century. It is that the kind of rigidly determined process of nature that was at first adhered to under the classical Newtonian physics is no longer held.

A simple and clear explanation of what has happened is given by William G. Pollard in his book, *Chance and Providence; God's Action in a World Governed by Scientific Law.*[26] The Reverend Dr. Pollard has a doctorate in physics and is Executive Director of the Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee. At the same time, he is an ordained priest in the Episcopal Church, and is the Priest-in-Charge, St. Francis Church, Norris, Tennessee. To this work and to the works of Karl Heim, I am particularly indebted.

This change which has occurred does not, by any means, make it easier for a man to believe in the God of the Bible, to surrender to him in the knowledge of sins forgiven, to find in him alone absolute security amid all the insecurities of life, and to be re-created by him each day into a new being. But it does help to remove some of the false stumbling blocks presented by a deterministic view. It will put the stumbling block in the right place, at the point of man's pride when he will not acknowledge a God above him, but means to be his own god. It will help to puncture the pretension of the scientist who says that he can prove by the methods of his science that the God of the Bible is nonexistent, that miracles such as those to which the Bible witnesses are an absolute impossibility, and that only the ignorant and superstitious will believe them. It will refute the Marxist who holds to a dialectic materialism which says that physics and the successful method of the natural sciences prove that this whole world process is rigidly determined and will inevitably end in the classless society of the communistic heaven. This is a disastrously false, optimistic view that is deluding millions and is, if anything ever was, inspired by the "father of lies."

It is by no means contended that the new physics will prove that the God of the Bible exists and that the miracles to which the Bible attests, occurred. Only the one who believes and puts his trust in the living God whom he himself encounters on life's way whenever the gospel is preached to him, will also believe that God acts in history, that he is indeed the Lord and ruler of all history, that he wills what he wills, and that he will bring his creation to complete fulfillment. St. Paul says in Ephesians that God has allowed us to know the secret of his plan, and it is this: He purposes in his sovereign will that all human history shall be consummated in Christ, that everything that exists in heaven or earth shall find its perfection and fulfillment in him. And here is the staggering thing—that in all which will one day belong to him we have been promised a share.

That this is so, a man will have to believe quite contrary to the evidence, and in spite of what he sees, in the world about him. If he is going to wait until he has all the evidence on his side, he will never get around to obeying.

It is only in obedience-in-trust that faith is given. Jesus said simply, "If any man will do his will, he shall know of the doctrine, whether it be of God, or whether I speak of myself." John 7:17.

Classical Newtonian Physics

Nevertheless, as we have said, an honest recognition of what physicists are saying will remove many a false stumbling block. According to classical Newtonian physics, all space is thought of as a huge box in which material objects are located at definite points, more or less like billiard balls, so that when motion takes place from one place to another, this represents a real change of location within the whole realm of space. Whatever motion takes place, takes place in a strict cause and effect sequence, according to uniform and inviolable laws which can be computed and stated mathematically. Just as there was believed to be the huge space box, so also there is a time line with a succession of moments, also exactly measurable. This yields the notions of an absolute object, of absolute time and space, and of an absolute determinism. Accordingly, the whole universe in time and space, governed by rigid laws, is like a giant mathematical equation, where events follow with the same kind of *necessity* that the conclusion of a valid syllogism follows from its premises, or the *Q.E.D.* at the end of a geometrical theorem.

In such a determined world, there is no room for human freedom or for a God who guides the affairs of men, answers their prayers, and in any way enters into human history. It is no wonder, then, that the so-called deists of the seventeenth century concluded that God is like a watchmaker who once made the world to run according to certain laws and continues to keep it in repair, but does not interfere with its regular, uniform ticking off of events, moment after moment.

Those who still believed in God and defended divine intervention, introduced a distinction between the first cause and secondary causes and a direct suspension of the laws of nature. God is the first cause who stands at the beginning of the time process and gets things moving, whereafter things keep going according to the laws of the mechanism that God himself has built, in much the same way that a sled slides down a slope once it has been given the initial push. This would mean that if you knew enough about the laws of this mechanism, you could start at any point in this process and predict everything that would happen, just as the physicist can describe the course of the experiment. You could also go back in time and reconstruct everything that had happened. Starting anywhere on the record of world history, you could play it either back to its beginning or forward to its end.

Insofar as God enters into this scheme, he would, in order to accomplish his purposes, have to employ secondary causes; that is, he would have to make use of the regular sequences of cause and effect. For example, he does not directly and immediately, without intermediate instruments, cure a person of malaria, but this is accomplished through the medium of quinine, which follows the regular cause and effect sequences, with God as the first cause. On occasion, however, he may, if he so chooses, suspend his own laws and interfere directly in the course of events without any intermediate cause. He then is the direct cause of the end of the fever; he does directly and in much less time what he ordinarily would do by using the secondary causes. This would then be the explanation of the miracles of divine intervention. As Karl Heim suggests, it would be as though the editor of a newspaper decided to make a change in the morning edition and were to stop the whirling presses, insert different letters on the type, and then let the presses continue to roll in their determined course.

Here we have then the notion of an absolute object, absolute time and space, and absolute determinism. By an absolute object is meant an atom which, as this word derived from the Greek indicates, is not cuttable. It is an absolutely stable substance, which is and remains just what it is, as though the chemical elements were like unbreakable bricks composing the universe. This is the classical notion of substance. Such substances are believed to be absolute in the sense that what they are is independent of the relations in which they stand. They are not relative to their particular time and place, but *they are what they are absolutely.*

There are also absolute time and space in which motion is not just relative to whatever point of reference you select, but absolute; while every second of time is just as absolute and independent of its relations. And finally there is an absolutely determined process which allows for no freedom.

No Absolute Object

This, however, no longer fits the modern physicist's view. First of all, there is no absolute object nor substance. There are no atoms or hard little pellets bouncing around in a huge box of a world. The uncuttable atom has been split. Nothing is stable. What a thing is depends on its relations to other things. In fact, the physicist cannot really get at the so-called ultimate or final building blocks of the universe. He can only use mathematical formulae to describe the behavior of the electrochemical energy with which he is dealing. From this fact some have concluded that ultimate reality is spiritual and not material. They have said that it is more like an idea than a thing, and so they have tried to refute a so-called materialistic view by upholding a spiritual one. So they thought they were rendering the cause of God a service.

This is, however, not at all the line of reasoning we wish to follow. To conclude that because a thing is spiritual (that is, of the nature of idea or mind) and not material (hard and solid and accessible to the senses), does not warrant the further conclusion that it is therefore better or higher in a scale of values or closer to the divine. If a physicist says that all so-called material objects, such as tables and chairs, are nothing but regions of maximum amplitude of superimposed phase waves, this does not mean that the tables and chairs cease to be solid material things on which you can sit and which you can throw at stupid people's heads. It only means that they have no stability; they are what they are, depending upon the relations in which they stand. Water is a seething caldron in one set of relationships and a cooling, refreshing stream in another. It also means that there is no permanent object that can be said to exist apart from the knowing subject. What exists, apart from the knowing subject, it is quite impossible to say.

This does have implications for the one who believes in the God of the Bible. It does not say to him that the ultimate stuff of which the universe is made is spiritual as God is spiritual—an invisible, nonmaterial energy, sans smell, sans color, sans every sensible quality. This is the road to the confusion of Creator and creature, and to pantheism (everything is divine). What it does say to the believer, however, is that no creature is absolute, permanent. It has no stability of its own. It must be held in equilibrium by the relations, and the absolutely basic relation is the God-relation, the relation to him who holds the whole wide, wide world in the hollow of his hand. Here is the modern man's counterpart to the age-old cry of the prophet, "All flesh is grass, and all the goodliness thereof is as the flower of the field: The grass withereth, the flower fadeth: because the spirit of the Lord bloweth upon it: surely the people is grass. The grass withereth, the flower fadeth: but the word of our God shall stand for ever." Isa. 40:6-8.

At the same time that the believer feels the instability and nothingness of all created things, however, he also is aware of the basic structure of the creation and the role that man plays in it as its crown. Here is all this tremendous, burgeoning, explosive energy, absolutely undreamed of, until puny man released it. And all this explosive energy does not follow a predetermined course with mathematical, predictable precision. It can go anywhere. This is in fact a wide-open universe, with infinite possibilities. This energy is always of a twofold character—a power either for good or for evil. It can destroy, maim, mutate, create freaks, annihilate, pulverize. On the other hand, it can build up, release, free, bring into being new and undreamed-of things. And the one who holds the controls—who makes the decisions—who can change the course of history—is man.

Now the big question is whether man is really the lord of creation or is himself under a Lord. He, too, is what he is only because of his relations. He is no absolute object, either. He is as volatile and ephemeral as all the other "regions of maximum amplitude of superimposed phase waves," the twentieth-century version of "ashes to ashes and dust to dust." He is no substance standing on his own pedestal. Unless, therefore, he is sustained by the Creator at all times, and unless the relation in which he stands to the source of his being, his Creator and Lord, is *right*, he is power run amok. He must reflect what God is, and God is love. As the moon reflects the light of the sun only when it stands in the right relation to it, so also with man. Only in the relation of trust, receptivity, surrender, and obedience, can he reflect the love in, for, and by which he was made. He must, therefore, always turn back to the light, present in word and sacrament, where the gospel is proclaimed and the sacraments administered in accordance with that gospel if he is to be a true human being.

Another basic consideration with respect to the absolute object is this. Physicists today are confronted with an absolute paradox; that is, a contradiction which they are unable to resolve. Ordinarily, when we are confronted with contradictory evidence, we have to make our own choice. If one witness says the suspect was present at the scene of the crime at the exact time of the killing, and the other witness says that he was somewhere else, miles away, at that exact time, they can't both be right. Of course, the jury might have a very hard time deciding which one is right, but it would not be in doubt that one or the other was wrong.

Of contradictories, if one is true the other must be false. And vice versa. They can't both be true or both be false. This is the basic law of thought, without the observance of which it is impossible to think as a human being, to reason, to communicate ideas. Yet facts are very stubborn things and—as we have said—the true scientist must always yield to the facts. The teeth in the horse's mouth are the decisive things and not some logical compulsion about abstract relationships. Now the phenomenon of light confronts man with contradictory evidence. Light behaves both like undulating waves (similar to sound waves) and like bullets shot from a gun. It is not that it behaves at one time like the one and at another time like the other. This would not be quite so mystifying. There is the simple, stubborn fact that the same phenomenon presents these two contradictory, mutually exclusive aspects, so that the physicist is forced to treat the same phenomenon as both. This simply confronts him with a fact that is puzzling to his reason while it nevertheless exists. This shows that it is not man's mind which decides what may or may not be so in the world. This is decided for man by what is given, even though it may seem irrational. It points to a duality of what is given, so that what is there must be treated in quite a contradictory way if one is to do justice to the facts. It sets the limits to man's understanding, while at the same time it indicates that man's mind is able to handle and control the given by treating it in this contradictory fashion.

Again this does not by any means open the door for faith and trust in the God of love whose eye is on the sparrow, whose love is immeasurably and equally great for each of his children. But what this does do is to provide an analogy from the realm of physics, where the evidence is so overwhelming, of how the same phenomenon, the level of the person to person relationship and the God-man relationship, presents contradictory and mutually exclusive aspects. One of these paradoxes is that of God's gracious working of the good in man. St. Paul says, "I am crucified with Christ: nevertheless I live; yet not I, but Christ liveth in me." Gal. 2:20. He says, "Work out your own salvation with fear and trembling, for it is God which worketh in you both to will and to do of his good pleasure." Phil. 2:12-13. This is the paradox whereby man must will that which is only willed by God in him. Both of these contradictory assertions are true. The chief of the paradoxes, however, is still the central fact of the Christian faith, Jesus, in whom man is confronted by both his brother and his Lord. If such a common phenomenon as that of light presents us with a mystery hitherto unsolved, then why should not he who is the Light of the world and himself the source of all light, present us with an absolutely unsolvable mystery? Light we may some day be able to control, but not Him who is the author of all light.

No Absolute Determinism

The paradox, however, which concerns us now in our discussion of science is that of determinism and freedom. We have said that there is in the realm of physics no longer any absolute determinism. In the middle of the last century, the Danish philosopher-theologian, Søren Kierkegaard, pointed out the confusion of the categories when speaking of necessity with respect to events.[27]

Necessity, Kierkegaard maintains, is a logical category which has to do with the relationship of ideas abstracted from existence. If something is necessary, it already is. Nothing can ever happen with necessity. As soon as the time element is introduced, something coming into being, the element of contingency, that is, chance, enters in. If something is "necessary," it exhausts the possibilities and could not be otherwise. All mathematical relations are thus, within the axioms of the mathematical system, necessary relations and, as such, already are. They cannot come into being. Every logical or mathematical system need only be discovered and laid bare. But as soon as there is the transition from being to nonbeing, *necessity* is no longer applicable. This makes all happenings in space and time contingent, and not necessary. It is also possible that this world and all its history should never have happened. When something happens, it can happen only by the operation of a cause, an initiating will. In a logical system nothing can ever happen, because the whole system is already there. It is quite illogical, therefore, to speak of a necessary emanation of the world from its ground or some such thing. This is a confusion of the categories, of the logical where necessity belongs, and history which is the sphere of the contingent.

There is a subtle illusion about events. After something has happened, it is, of course, undeniable that it has happened, and the series of events that led up to the event may be traced. But the fact that an event happened and happened precisely in the way it did, does not mean that it *had* to happen at all or that it *had* to happen in precisely the way it did. We can see this more clearly before an event has taken place. Then we still see any number of possibilities which make absolutely certain prediction impossible. Judging from past performances, it is almost certain that the Yankees will continue indefinitely as the leading power in baseball, but not being the sporting kind, I wouldn't bet an old toothbrush on their winning this year's World Series. So necessity is the wrong category.

The philosopher Hume said the same thing with respect to all matters of fact. He said there is no necessary connection between two events that happen one after the other, no matter how often they happen in that order. With his tongue in his cheek, he said that this was just a matter of habit, of psychological conditioning. When we strike the golf ball with the club, we expect the ball to go soaring or at least dribbling along the ground (depending on how good our golf is) because we have seen it do so often before. There is no necessary connection between the striking of the ball and its flight through the air. It is also possible that the club should go flying and the ball remain where it is. Hence every matter of fact has only a high degree of probability and is never absolutely certain. It is only probable that the sun will rise tomorrow. It could also not rise. There could be a cosmic catastrophe of some kind. Man himself might set up a chain reaction that would blow up the solar system. While we may be absolutely certain that two times two is four because this exhausts the possibilities, we can never be sure of our counting of the cards. It is always possible that we may have miscounted, or that some cosmic magician is playing tricks on us and flipping extra aces in and out.

Now these assertions of Hume and Kierkegaard, that history is the sphere of the contingent where necessity and absolute certainty have no place, find striking confirmation in modern physics. No longer are the so-called laws of nature regarded as absolute, but they are regarded only as statistical averages. This is due to what is known as Heisenberg's principle of indeterminacy, according to which prediction at a certain level of atomic behavior becomes impossible. At this level it is impossible to give both the location and the speed of a particle at the same time. If you stop the particle and locate it definitely, then you cannot determine its velocity. If you determine the velocity, you cannot definitely locate the particle. Thus it is impossible to predict the behavior of the particle. This is not due to a temporary ignorance which can, upon further investigation and experimentation, be resolved. This is due to the way things are, and so the prediction is intrinsically impossible. The supposition, therefore, that you could start with any event and play the record backward, is ruled out because it would be either impossible to locate the particle or, if you did locate it, it would be standing stock-still and going nowhere.

This can also be illustrated in another way. For example, the radiation from a particle is not a steady flow, but is released in certain definite quanta at intervals of time. It may be that, on the basis of observation, it can be predicted that of a given thousand particles, five hundred will, in a given time, release their radiation, but if you pick out any given particle, it will be quite impossible to say into which group it will fall. This is all that is meant by indeterminacy or contingency. It is similar to the tossing of a coin. The mathematical probability of heads coming up is always fifty-fifty, but this still leaves it quite impossible to predict with certainty whether any given throw will be heads or tails.

However, it would be quite wrong to conclude at this point that chance and caprice reign and that there is no order in the universe. It would be equally wrong to conclude that here in the heart of the atom is the point at which free will enters or that it is here that God gets his finger into the pie. Neither free will nor the guiding action of God is to be inserted in this sneaky, underhand way into the cause and effect sequences.

The reason why one cannot insert the causal action of free will or of God at this point must be clear. Even though exact prediction of any given particle is impossible, nevertheless it is still possible to establish statistical averages from the observation of a great number of similar particles under like circumstances, and so to establish a high enough degree of probability to make accurate predictions. The fact that water always boils at the same temperature under the same atmospheric pressure is ascertained from observing a great number of particles under such conditions. The same is true of all the uniformities of nature on which our lives depend. If it were not for these uniformities, we could not live. All scientific advance would be impossible, and we would never have come into the space age. The uniformities which are the most striking are precisely those connected with astronomy, the movements of the stars which return in their courses after millions of years with split-second precision.

The only thing we can conclude, therefore, from the Heisenberg principle and from the whole of modern physics is that it is not an absolutely determined process, but one in which chance and alternatives have a fundamental place. The fact, therefore, that one alternative is chosen and not another, and that statistical averages are established at least leaves it open that there is a ruling and guiding will and that all is not chance. Absolute determinacy is ruled out. This leaves only chance or a ruling, guiding will. Chance is always a possibility in a wide-open universe, and this is the alternative many choose to hold to, unlikely as it is.

Providence a Possibility

The other possibility, however, of a God who made the world for a purpose and retains his sovereignty over it, also exists. Moreover, we may validly conclude that the kind of indeterminacy that exists at the level of subatomic behavior we have described also exists at the higher level of human behavior, where man stands as a center of decision and faces genuine alternatives, and by his decisions shapes history. Here is the greatest sign of God's omnipotence, that he has given to man this freedom without losing any of his own sovereignty. Only absolute power can give freedom and not thereby limit itself. This, however, according to Kierkegaard, is the measure of God's power that he does just that.

"Creation out of nothing is once again the expression of omnipotence for being able to make things independent. It is to him who made me independent, while he nevertheless retained everything, that I owe all things. If in order to create man God had lost any of his power, then he could not have made man independent."[28]

We have thus far said that in a world of absolute determinism, such as Newtonian physics envisioned, human freedom would be an impossibility. In the world as modern physics sees it, there is room for chance and genuine alternatives. In fact, there is every indication that chance and blind fate reign. How many absolutely nonsensical things happen in the world! How many great issues are decided by the most insignificant occurrences! History is shaped by the shape of Cleopatra's nose. What a concatenation of fortunate circumstances is necessary for success! Kierkegaard tells the story of how Napoleon was to confer a distinguished service medal upon a certain soldier. By some mistake, the honor was conferred upon the wrong man. When the mistake was discovered, an effort was made to correct it, but Napoleon gruffly refused to make the correction, saying that the man had no luck.[29] How much depends on a lucky throw of the dice! Is it luck or is there somewhere a guiding hand of Providence?

If all is chance, then the tragedy of it is that there is no justice. The questions we have raised about determinism and freedom arise only because there is ineradicably implanted in every human being a sense of justice, of fair play, that every man should have an equal and fair chance, that he should not have the cards stacked against him. He who does not know of himself what justice means and does not desire it for himself is not a human being. A man may be ever so proud, ever so brutal, ever so covetous and grasping; he may be ever so distorted in the exorbitant claims he makes concerning that to which he is entitled, but he never escapes the claim to justice. Revenge is perverted justice and would not be possible without a sense of justice. Even love, which surely exists in the world, is meaningless unless we see how it goes beyond the demands of strict justice. So it is the cry for justice, which is the agonized cry of men in a world of caprice where there is no equality of gifts or opportunities and where the righteous suffer more than the wicked. The Psalmist who said, "I have been young, and now am old; yet have I not seen the righteous forsaken, nor his seed begging bread," Ps. 37:25, is therefore greeted by a million-voiced chorus of those who have seen otherwise. In the words that Archibald MacLeish puts into the mouth of his Satan (Nickles), as he looks upon the tortured Job (J. B.):

> Think of all the mucked-up millions
> Since this buggered world began
> Said, No!, said, Thank you!, took a rope's end,
> Took a window for a door,
> Swallowed something, gagged on something . . .
> None of them knew the truth as Job does.
> None of them had his cause to know.

* * *

> Job won't take it! Job won't touch it!
> Job will fling it in God's face
> With half his guts to make it spatter!
> He'd rather suffocate in dung—
> Choke in ordure—[30]

Nevertheless, Job maintains God's justice and man's guilt:

God is God or we are nothing–
Mayflies that leave their husks behind–
Our tiny lives ridiculous–a suffering
Not even sad that Someone Somewhere
Laughs at as we laugh at apes.
We have no choice but to be guilty.
God is unthinkable if we are innocent.[31]

Satan, however, objects to God, calling Job's affirmation of God, acceptance of his sufferings, "wonderful":

...You think it's
Wonderful...
I think it stinks!
One daughter raped and murdered by an idiot,
Another crushed by stones, a son
Destroyed by some fool officer's stupidity,
Two children smeared across a road
At midnight by a drunken child–
And all with God's consent!–Foreknowledge!–
And he blesses God!
It isn't decent!
It isn't moral even! it's disgusting!
His weeping wife in her despair
And he beside her on his trembling ham-bones
Praising God! . . . It's nauseating![32]

So the protest against injustice continues to make itself heard.

Providence and Faith

Moreover, how shall we discern whether it is chance or providence? There is the wonderful story of Ahab in the Bible, 1 Kings, chapters 21-22, which puts the question squarely before us. Ahab had coveted Naboth's vineyard, that he might add it to his palace gardens. But Naboth refused to give it up even at a good price, for it was the inheritance from his fathers. So Ahab turned his face to the wall and pouted until he was egged on by his wicked

Queen Jezebel to show whether he was man or mouse. Then, by a show of right, she contrived to get the vineyard for him. Naboth was falsely accused, in the presence of everyone, of blaspheming God and the king—and he was stoned in righteous indignation, while Ahab took possession of the vineyard. Then came the prophet Elijah and told Ahab that God would punish him and that where the dogs had licked the blood of Naboth they would also lick his. So the time came when Ahab went into battle, and fearing that the prophecy might be fulfilled, and, knowing that the whole Syrian army was out to get only him, he disguised himself and dressed Jehoshaphat in his kingly robes, instead. But after the ruse had been discovered, quite by chance, "A certain man drew a bow at a venture, and smote the king of Israel between the joints of the harness." 1 Kings 22:34. And when he was dead, they washed his chariot at the same spot where Naboth had been stoned and the dogs came and licked the blood. Was now the prophecy fulfilled or was it chance? Was it chance that the arrow pierced even between the meshes of the armor and found its mark, and that Ahab did not happen to have a New Testament handy over his heart to protect him? Or was it providence and a just avenging? Who will say? Only *faith* or *offense* can answer; either the cry against it or the surrender of faith.

It is the answer of faith that history does not run in meaningless cycles as do the physical elements, as when water turns to steam and steam back to water. This is the level at which prediction is possible on the basis of probabilities and statistical averages. The sun and the moon and all the starry hosts run their cycles, and for all we know it is all an endless recurrence (as Nietzsche supposed), like the shuffling of a deck of cards where every hand will reappear infinitely at regular intervals—even the perfect bridge hand. Or else, according to the law of entropy or the second law of thermodynamics, the universe is running down, since all expended energy runs to less and less available forms until a perfect state of equilibrium is reached and nothing can any longer happen.

"Scientific" Time

The Christian, however, affirms a center for history and thus gives the whole process direction on a one-way street on which there is no turning. This implies a different concept of time than that of Newtonian physics, where time was supposed to be as absolute as the absolute object and the absolute determinism. Here again, modern physics may be of aid. Time is just as relative a matter as is space itself. It is regarded as a fourth dimension, which must be counted into the reckoning when a description of any object is given. A thing is not only in the other dimension of space but it is also locatable on a time line. Just as motion is not absolute but is only relative to an arbitrarily chosen point of reference, so it is also with time. There is no crucial, decisive point of reference with respect to which time may be reckoned—no beginning from which time flows, no end toward which it moves, no real before and after.

This concept of time is what Pollard calls "scientific time," that is, the quantitative, measurable time—the succession of moments, each of which is as alike as the other, where there really is no distinction between past, present, and future, because the present (like the mathematical point which has no extension in space) has no extension in time, but is only the nonextended dividing line between what is already past and that which is still to come. But that which is still to come is in a sense already there in the space-time dimension. We can graph the population changes and other changes through the years with their ups and downs and their horizontal extension. This graphically extended time line can also be projected into the future. In this way, we get some idea of the space-time dimension. Everything that has happened and will happen in space-time is, so to speak, already laid like the towns along a highway. No given moment is of any more decisive significance than another. It's just a location on the space-time continuum. This is how the scientist regards time. He reads a timetable which indicates where the train was, is now, and will be.[33]

"*Historical*" *Time*

This spectator view of time is, however, an abstraction. It is historical time in which we live, where we actually make our decisions, and in which we live always in the present moment of decision with the past irrevocably behind us and the future uncertain before us. It may be that the cosmic spectator can graph all events on the space-time line, but this is impossible for the one who is himself involved and is himself a maker of the future that still lies before him. He is in the very nature of his confinement to the present moment in the place of insecurity and anxiety about what the still undisclosed future may hold, and he certainly has his anxieties about the past, his regrets, his memories, his longings to recapture the golden moment, the lost youth. Whittier's poem, "Maud Muller," expresses this as follows: "For of all sad words of tongue or pen, the saddest are these: 'It might have been.' "[34]

As far as the future is concerned, no amount of computation of the high probability of the occurrence of a future event can take away the uncertainty concerning its occurrence. This is illustrated by Karl Heim, when he tells of the Krupp works in Germany where the visitors are shown a giant press in which a huge hammer falls with terrific speed; its fall is checked time and again with such precision that a watch placed beneath it remains with crystal unbroken. The hammer moving at tremendous speed comes within a hairbreadth of touching the crystal, but leaves it untouched. Yet when visitors are asked to put their hands under the hammer, not one will do it because there is always that one chance in a million. This example illustrates the anxiety for the uncertain future in which man always lives, which no amount of high degree of probability can eradicate.

That is why time in the Bible is differently conceived. For the ancient Hebrews and throughout the Biblical witness, time is not regarded as the succession of empty moments that the clock ticks off with monotonous regularity, but time is always the time for something. It is the time of the early or the later rain, or it is the time of drought. It is the time of the storm or of the calm. It is the time of birth when a woman forgets the pain of her travail for joy that a new life is born into the world, or it is the time of death when the silver cord is loosed, the pitcher that has gone so long to the well is broken, when the mourners go about the streets because man goes to his long home. It is the time of opportunity or the time when the opportunity is already passed. It is the time of crisis, up to which events have been building, the crucial point which marks the decisive turning point in the history of a nation or an individual or a battle or a disease. It is the time of decision when a man is on trial, or it is the time of judgment when a man is called to account for his decisions. It is the time of grace when God still suspends his judgment or the time when the full consequences of a deed tumble down upon the guilty in fearful recompense. It is the time of faith, when a man must trust an unseen God and obey his command, or it is the time when faith turns to sight, and God in all his glory stands revealed to the consternation of the damned and the joy of the redeemed.

To relate it specifically to that drama to which the Bible bears witness, it is the time of preparation when all events are still leading up to that moment filled with eternity, when all past, present, and future are gathered into one, and the mystery once hid is revealed. It is the time of the search, the longing, the vain and futile attempts to achieve the beatific vision, to achieve righteousness, to overcome insecurity and guilt and loneliness by one's own efforts. This is the story of the religions of the world— Or it is the time of fulfillment when God himself reveals himself and puts an end to man's search, when God bestows himself freely as a gift, and so himself puts an end to man's insecurity, guilt and loneliness. This happened once and for all in a unique way in the coming of Jesus as the Christ, a crucial, decisive, new-aeon-creating event—and the whole world lives now in the light of that event and can never be the same. What happened then, once and for all, also happens decisively in the life of every believer, to create a decisive before and after, a death of the old and a birth of the new. "Old things are passed away; behold, all things are become new." II Cor. 5:17.

This is a brief indication of the kind of wrist-watch time with which the scientist deals—and the alarm-clock time of the Bible, when it is time to wake out of sleep because redemption draweth nigh.

This is where all men live. Each man is dumped into his own time and place, which he did not choose, which he cannot exchange with another, which is his inexorable destiny. Each moment, with his particular burden of his own past, he shapes himself, as a center of responsibility, by his decisions. He is thus shaped by forces completely beyond his control at the same time that he actively shapes himself and his history with his will. He makes himself and his history within the severe limitations of the given. In every moment he acts in responsibility before the living God, the all-seeing, just, holy and loving God, under whose judgment and grace he always is. This is the specifically human level at which he lives, where he is confronted by other persons who are equal centers of responsibility and whom he must respect as such.

The Level of I-It and the Level of I-Thou

On this level of the responsible person, therefore, the impersonal, statistical, quantitative categories of the natural sciences just do not apply. A method of prediction and control simply destroys the personal relation. It turns the I-Thou relation into an I-It relation. It turns the relation where two personal beings confront each other in personal address into a relation where the one uses a thing merely for his purposes, manipulating it and pushing it around. Another person dare never be *used* in this way. This is the glory of the relation between God and man which the Bible reveals. God himself never manipulates man in this way. He never makes him his pawn. So seriously does God take the freedom he has bestowed upon man that he will not reach out and forcibly hold back the one who in pride revolts against him. He allows man the freedom of bringing about his own destruction, of creating his own hell of estrangement and separation from him in whom alone there is fulfillment of his self.

Man, however, is not willing to stay his hand, and herein lies the great danger implicit in the power of manipulation that has been given into the hands of man by the unprecedented advances of science. In the Communist ideology, as well as in the writings of many adherents of what we may call "scientism," who are not Communists, this is explicitly stated. It is claimed that in the method of the natural sciences, man has at last discovered the only way to solve his problems and to end the world's miseries, not only of physical pain, hunger, and disease, but also of mental and spiritual anguish, which are the result of misrelations. The adherents of this view feel that the method and the tools are there; all that needs to be done is that they be consistently applied. They draw no arbitrary line between man and things, between the cure of a disease by this method and the cure of evil in a person or a society by the same method. Granted the much greater complexity on the human level, nevertheless the case is not hopeless. Find the cause of the disorders, readjust the person, mentally and otherwise, change his environment, and whatever else needs to be done. If this means thought control by means of injections, changing the personality by manipulation of one kind or another, all this is only in the interests of humanity. All must be done according to the tried and tested methods, whether this be in the realm of the laboratory with chemicals where a new plastic is to be produced, or in human relations where a successful mating is to be achieved, or a peaceful society living together in one vast anthill of a world is to be constructed.

To pan this kind of scientism seems almost like kicking a dead horse. There has been protest enough against it, particularly on the part of the great scientists themselves, who are fully aware of the limitations of their method. Yet the actual solution of how to make use of, and yet limit properly, the obviously successful method of the natural scientist is not so easy. In every area, whether it be that of counseling, of educating, of preaching, of rehabilitating the criminal, of ridding men of their false fears and anxieties, guilt complexes, and frustrations, there are tried and tested methods that the informed need only apply. So intimate is the psychosomatic unity that no clear dividing line can be drawn. Where all so-called spiritual ministrations fail to give peace and sanity and courage, a tranquilizing pill will do the trick. The brain surgeon accomplishes what no amount of exhortation can do. The biochemist does what the preacher and the priest try vainly to accomplish. What is regarded as a malicious perversity is actually nothing but a malfunctioning gland. The man is not deliberately lazy, he has hookworms; he is not guilty of angry thoughts or lack of faith, he has an overactive or underactive thyroid.

All this calls for the kind of division of labor we mentioned at the beginning, and for the setting up of the severest limitations where the control of the person and the turning of the I-Thou relation into an I-It relation is concerned. Even if a person can be controlled, the question always remains whether it is permissible, not only from the standpoint of the Christian faith but from a universally humane point of view which has respect for human dignity.

The Category of the Individual

We can get at what is involved from a different point of view. The scientist always deals with the universal and not the particular. That is to say, the scientist does not deal with what is unique and once and for all, but with that which is repeatable any number of times. He deals with the common properties of matter abstracted from the particular. So, for example, to the scientist who is in search of a cure for cancer it does not make any difference whether it is Mary Brown or John Smith. If they both have cancer, they hoth have it in the same way and they will both be cured of it in the same way. If they can't be cured in the same way, it is the sure sign that they don't have exactly the same illness. There are other complications. The scientist in order to control the process must thus always abstract from the particular and try to discover the universal or generally applicable "laws," observed uniformities. This takes us back to the beginning of Chapter 2 where we commented on the loss involved in this power of universalizing and of abstracting from the particular. It always results in the turning of the I-Thou relation into an I-It relation.

It is different on the personal, I-Thou level, where the particular must always take preference over the universal. God does not deal with people en masse, but he always deals with particular, absolutely discrete individuals, individuals with names whom he calls by name. God loves each one and will not sacrifice any single one simply for the sake of the development of a superman. It may be that on a certain level of nature it is only on the basis of prodigal sacrifice that a few fine specimens are developed. Not so on the level of the human being. Each single, discrete individual is infinitely precious in God's sight. Each one has his own destiny, his own particular time and place, in which he is addressed by name, called upon by name, to respond to the claim of God's love upon him. This results in a whole chain of consequences that cannot be fully discussed here. Each individual is alone responsible to God for his life and the handling of it. God calls each particular individual to a particular task and judges him accordingly. Love is never universal but always particular. We are not called upon to love humanity in general, but particular men and women whom we encounter on life's road. Each single individual is, therefore, isolated in this God-relationship and the relation to the neighbor in whom God confronts him. In dealing with one another on the personal level, we must always deal with particular individuals in all their uniqueness. No two are ever alike. No two, therefore, can ever be treated alike. The doctor, as a priest and a Christ to his neighbor, deals with John Jones and Mary Brown, and not with case number 1648. This may help us on toward a solution of our problem.

There is no rule of thumb by which the proper working together of the pastor or priest and the scientist can be guided. There are no rules, either, by means of which the conflict that goes on within the man of faith who is also a scientist—as we suggested at the beginning—can be resolved. He can't compartmentalize himself, or confess one thing on Sundays in church and then behave quite differently at his work during the week. Perhaps there is an indication of the solution when we remember that the same physical phenomenon has two aspects and must be treated as such. Light is both waves and particles. So with man; he is both a part of the processes of nature and an independent, free center of responsibility—and if justice is to be done to the facts, he must be treated as both. Whatever controlled manipulation there is must take place only in order to free him as a person, to allow him to act responsibly, in true freedom and not in bondage. It is to true freedom in obedience to the living God that the Christian church calls him—this freedom is something that can only be bestowed by the creative, life-giving word of God which the church can only proclaim. Only he who has been restored to his proper self and has the proper curb put on his pride can be saved from the sin of manipulating his brother.

A Division of Labor

The answer as to the relation between the Christian faith and the employment of the method of the natural sciences is a proper division of labor and a putting of the power man has gained into the service of love.

Then the new break-through that has given so much more power into man's hands may serve constructive purposes, without any illusions of a heaven on earth, because this will still remain the time of struggle, of crucial decision, of the continuing battle against evil. Men who travel into space will certainly find no greater security when we think of all the hazards involved. They will find it no easier to love instead of hate, to be humbly grateful instead of proudly domineering. They will not find an end to their loneliness, their guilt, the threat of meaninglessness. They will not discover out there some new meaning of justice and of the universally recognized human virtues. Life remains the great adventure. Man's horizons have been extended in space, but the basic nature of existence has not changed. The same fearful alternatives of the drop into the abyss or of the peace of God that passes all understanding remain. The issues are still between life and death, good and evil, God and Satan. The Christian is not promised any surcease from pain, suffering, tragedy—he is promised only a life beyond this one, in the resurrection of the dead and a new heaven and a new earth.

The Attitude Toward the Bible and Revelation

One thing that is absolutely essential to the right kind of reconciliation between science and the message and mission of the Christian church is a changed attitude toward the Bible. In the present flight to security, there is a positively frightening revival of the kind of Biblicism which looks to the Bible as an inerrant oracle, every sentence of which is true, and which speaks authoritatively on all matters, whether they concern anthropology, geography, history, chemistry, or physics. It is no wonder then that the assured and reasonable results of painstaking scientific investigation come into conflict with so-called revealed truth. It is a matter, therefore, of clearly recognizing the kind of question to which the Bible gives the answer, and of understanding the nature of revelation, to which the Bible bears witness. There are many questions to which man himself can find the answer and when he has found the answer, he is obviously in control. This, as we have said, is the realm of the natural sciences, and we should set no arbitrary limits upon what is discoverable and controllable by means of this method, as long as we know the points of man's real and irremediable impotence in relation to the living God under whose judgment and grace man at all times is. This God is not at the end of a human chain of reasoning, nor is he an hypothesis that man sets up in order to explain the gaps in his knowledge. For such a "God of the gaps," no self-respecting, intelligent human being ought to have any respect whatsoever. God is not there at the fringes of man's knowledge simply to explain what still remains inexplicable and mysterious, but the living God confronts man at all times, calls him to worship, obedience, and adoration, and whether or not man will choose to respond to him, acknowledge, defy, or ignore him, is not an option that can be held in abeyance. Every deliberate act of man is in some sense already a decision pro or con, and even the delaying of a decision is a decision. In relation to this living God there is no neutrality. The God who searches to the depths of man's being, unto whom all hearts are open and from whom no secrets are hid, will have no difficulty recognizing how things really are with a man and what an absolutely impartial and all-knowing judgment will reveal.

Now it is the affirmation of those who have themselves been apprehended by God—that is, those to whom God has revealed himself—that no man ever responds in the right way to the presence of God in his life and the claim this God puts upon man. St. Paul says (Rom., ch. 1) men worship the creature rather than the Creator. In the most subtle ways, they confuse what is on this side of the abyss that separates the creature from the Creator, and instead of trusting God and surrendering unconditionally to the claim of his love upon them, they put their trust in and give their allegiance to an idol which they themselves have fashioned. Whatsoever a man sets his heart on, that which determines his life, that for which he lives, that to which he turns when his life is threatened, that in which he puts his trust when it comes right down to it, that is his god. Yet the first and inclusive commandment is, "Thou shalt have no other gods before me." Ex. 20:3. The God who says this is the God to whom the Bible witnesses and whom the Christian church proclaims. The Bible is the record of the revelatory acts and words of this God—the God who, out of all the nations of the world, chose himself a people—seemingly with the greatest arbitrariness, simply because they had no claim whatsoever upon him. He chose them out of love, having mercy upon an unworthy and idolatrous people, even as the prophet Hosea went out and took unto himself a wife of whoredom, and then each time she proved unfaithful, went and bought her back again. It was this God who out of this nation which he had chosen in his love also chose himself a maiden—equally as unworthy among the maidens of Israel—that in and through her seed he might implant himself into human life and human history and begin a new age for all mankind.

In Jesus of Nazareth, a true man, so the Biblical writers witness, there was present upon the earth, he who made the worlds and still maintains them. Here was, incarnate in a human life, the love that made the worlds. It was this love that gave itself unto death, it was this love that triumphed on the Cross over all the consummate evil of the world; it was this love that continued to be present after the Resurrection in the midst of a chosen group of people who believed themselves called out of darkness into light. So the Christian church came into being as a fellowship of those in whose midst this God who had become incarnate was still present. In his name they went to the far reaches of the earth with the good news of what had happened, to proclaim to all mankind the abiding, unswerving, steadfast love of this God of all the worlds in whom alone there is rest and security and joy everlasting.

To these revelatory and redemptive acts, the Bible witnesses. It interprets the significance and meaning of these events in all their cosmic, that is, universal, significance. It should be clear, then, that what is here witnessed to stands quite independently of what scientists have discovered and may still discover. Sixteen hundred years before science began its phenomenal march of progress, Jesus stood and affirmed that he was the Messiah and there was no need to look for another. Cures for cancer, the discovery of other countries, other worlds, ways of traveling through earth and sea and air, all these still remained to be discovered. But here man's quest with respect to the ultimate questions of human life and destiny has come to an end, for "In him dwelleth all the fulness of the Godhead bodily." Col. 2:9. The heart and mind and will of the Creator of the universe was laid bare, not in an insight that man had caught for himself, but in a personal life of love in action that confronted man and so called him to surrender to the true Lord of his life.

In the very nature of the case, therefore, this stands outside of the sphere of so-called scientific investigation and verification. God loves you, forgives you your sin, will raise you from the dead. These are not propositions verifiable by the method of the natural sciences, and no reputable scientist who knows the limitations of his method would presume to sit in judgment upon them. Whether or not we are responsible creatures, made in, for, and by love, in God's image, in order to reflect that love which is God, is not something that can be investigated as you investigate the chemical composition of a compound or the storehouse of energy within the atom.

As long, therefore, as the Bible is seen as what it truly is—not as a textbook in science, history, and geography, but as the interpretative witness to God's acts of self-impartation in a series of events that culminate in the life, death and resurrection of Jesus as the Christ, that is, the anointed of God, in whom there is salvation—and the founding of the Christian church is seen as the fellowship of those gathered by and about his living presence, there is no conflict between the findings of science and the claims of revelation. As long as each sticks to his appointed task, there is no conflict. It is only when scientists forsake their own realm of investigation and competence that they come into conflict with revelation. This kind of division of labor is not easy, because the assumptions on which the natural scientist must operate, the uniformity of nature, a determined and controllable process, will forever tempt him to see no limits to what he can eventually accomplish. He will be tempted, as the Communists and others, too, who make a god of science are now doing, to put all his trust for the better tomorrow in this method.

By way of reaction to this kind of scientism, the Christian (and I must insist on saying "Christian" and not simply the advocate of religion, because scientism is itself a religion when man puts his trust in it and makes it of ultimate concern), the Christian may see in the work of the scientist some kind of demonic manifestation, instead of seeing it as part of God's own gracious activity in, with, and under the "masks" of creation.

A Doctrine of Vocation

If anything is humbling and inspiring, it is the story of the patient toil, the sacrifices, the indomitable spirit in the face of insurmountable difficulties, of the great men of science. "Inspiration is ninety-nine per cent perspiration." Nature does not yield her secrets to the indolent, but every advance has been wrested from her only at the price of blood, sweat, and tears. In the face of suffering and of restrictions, time and again, the men of the church resigned themselves futilely to the will of God and did nothing, while the scientists pulled up their sleeves and went to work. As we have tried to point out, very often these scientists were men of God who did this deliberately as a service to God under divine constraint, but very often they were also men who had rebelled against submission to a god who appeared to them only as the sign of man's loss of nerve, and who saw man's only help in helping himself. Who are we to sit in judgment upon these men, whose concern for their fellow men and for human misery drove them with a will of steel to persevere until they had succeeded? Without them we would be back in our caves, and it is not very gracious—to say the least—for us to reap the benefits of their labors and then cast stones at them. In all humility, in deep gratitude, we should acknowledge their sacrifices, their services of love by which we live.

The figure of the "masks" of God is, it seems to me, therefore, one of the most helpful notions of the great reformer, Martin Luther, which together with the doctrine of vocation he proclaimed, should not be hid under a bushel. This is not a matter of denominational pride, but simply a matter of what will contribute meaningfully to the understanding of the Christian faith. Luther was so filled with the sense of the nearness of God in the creation all about him that he seems almost like a pantheist who more or less identifies God and the world and makes the universe itself into a deity. But nothing could be further from the truth. To him, as for the entire Biblical witness, the confusion of Creator and creature is absolute in the sense that the whole creation depends for its being at all times upon the creative power of God and his sustaining will. Nothing whatsoever could be, unless God wills that it should be. This, especially with our present knowledge of the immensity of the universe, both in time and space, is a tremendous assertion. The stuff of which the universe is made, all the burgeoning energy held bound within the atom which has now been released, is not to be regarded as itself divine, or eternal in the sense that it is impossible that it should not be. It is possible that all this universe should not be. It could and would disappear into nothingness if the God who wills it to be would will it not to be. This is the only kind of humility and feeling of creaturehood that is worth the name and that really acknowledges the sovereignty of God, and unless one begins with this initial affirmation, it is useless to proceed any further in the understanding of the Christian revelation.

So there is this initial basic distinction between Creator and creature with God alone on the creator side in lordly self-sufficiency, not needing the world, with the world not somehow necessary to his being, and all else on the creature side depending absolutely for its being at all times upon the creative fiat, Let it be! But this creator God, for all his lordly self-sufficiency, is not far off in some distant realm of either space or time. Out of love, by an act of will, not for his own sake but for the sake of the creature on whom he would shed his love, he brought forth the worlds and continues to bring them forth.

The act of creation is, therefore, not some datable act of the past that we could arrive at by turning the clock back, but it is this continuous act of creation at all times without which nothing could "be" that "be's." And now this creator God is present in this creation of his as the masquerader is present behind his mask, which both hides and reveals him. The mask is not to be confused with the one who wears it. The Creator is not to be confused with the creation. "Who coverest thyself with light as with a garment: . . . who walketh upon the wings of the wind." Ps. 104:2, 3. This does not betray a naïve, anthropomorphic view of a god, made in man's image, cavorting among the clouds. It is not a personification of the forces of nature. It is this realization of the presence of the creator God in the medium of the creature, without confusing the two. Thus the presence of God is always in a "mediated immediacy," and God himself is never directly discernible by the human eye and man can never, by searching, find out God, and neither the most powerful telescope nor the most powerful microscope nor the journey to the farthest reaches of space will make this God accessible to the senses, until the time of decision is over and "faith turns to sight." And yet this God is present everywhere, closer than hands and feet, in an immediate, direct but "mediated" confrontation. This is the cry of the Psalmist:

"Whither shall I go from thy spirit? or whither shall I flee from thy presence? If I ascend up into heaven, thou art there: if I make my bed in hell [Sheol—the place of the shades in the bowels of the earth], behold, thou art there. If I take the wings of the morning, and dwell in the uttermost parts of the sea; even there shall thy hand lead me, and thy right hand shall hold me. If I say, Surely the darkness shall cover me; even the night shall be light about me. Yea, the darkness hideth not from thee; but the night shineth as the day: the darkness and the light are both alike to thee." Ps. 139:7-12. "Such knowledge is too wonderful for me; it is high, I cannot attain unto it." Ps. 139:6.

It is "in, with and under," the created thing, therefore, that God is present, for not one of these prepositions, nor all of them together will suffice to make clear what is meant. God is not "in" the cloud as the water is in a pot; he does not come walking along "with" the sun as it journeys across the sky, as the friend walks with friend through the countryside. He is not "under" the carpet of the grass as the rabbit is under the hat, so that by lifting he could be uncovered. And yet he is there in direct and personal confrontation, eye to eye, face to face, calling to worship and obedience. In the storm and thunder and all the fearful glories and catastrophes of nature, there, too, his voice is heard—as well as in the stillness of the night.

Now the point is that it is not only in and through these masks that God confronts man, but also that it is in and through these creaturely masks that he bestows all his blessings upon man, giving light and energy and all that is necessary for life through the sun, the rain, the good earth, and all the so-called natural resources. Nothing comes from God directly except through these media. They are all therefore his handmaidens, his angels who do his bidding, his ministers who are flames of fire. Whoever handles these things—the farmer in the field, the chemist in the laboratory, the biologist, the sociologist, the botanist, the artist, the musician, the sculptor, the architect—all of them are now themselves also the masks of God in, with and under whom God works and through whom he imparts his blessings.

This is where the so-called doctrine of vocation is rooted in creation itself, and no one can escape this being called of God to be a medium or channel of God through whom God gives that which is good. Life does not come direct from God. Children do not spring full-blown from the head of Zeus. They are born of the love of human parents who are the masks of God to give them life. This is no "Schlauraffenland" where, according to the German fairy tale, the roast ducks and geese and all the most delectable foods and drinks float down from the sky right into one's open mouth. The manna does not drop straight from heaven. The farmer must till soil, the miner must dig, the housewife must cook food, the truck driver must deliver it, the chemist must analyze ingredients, the doctor must administer medicines, the nurse must put cool hands on feverish brows, and all these in their several callings are the masks of God.

It is so that the scientist fulfills his role as the mask of God in and through whom God blesses mankind.

This is how all the phenomenal advances of science should be viewed: as the gifts of God to men to enlarge and enrich their lives. "Every good gift and every perfect gift is from above, and cometh down from the Father of lights, with whom is no variableness, neither shadow of turning." James 1:17. All is the gift of God. What have we that we have not received? Then why do we act as though we had not received it? Why, when that tremendous shock overpowers us and we realize that we could also not be, that we do not have life in and of ourselves, that we cannot stave off the death that threatens us with nothingness, that we are indeed dependent upon another in whom alone dwelleth immortality, why then do we not remain in this proper attitude of humility and acknowledge who and what we are before the Lord our Maker? No scientist worth his salt, to whom there came as from another world the solution of his problem, would take the credit to himself. What are genius, cleverness, insight, the creative imagination, but gifts that no one can give to himself? They are inborn, we say. It is the mystery of the "given" over which we have no control. There it is, a boon to mankind, to enlarge his lot and set his feet in pleasant places, "wine that maketh glad the heart of man, and oil to make his face to shine." Ps. 104: 15.

So the doctrine of vocation is rooted in creation, and—Christian or not, this makes no difference—everyone who does what his place in life calls for thereby glorifies God and renders a laudable service—the maid who sweeps the floor well, because God wants the floor swept, and the scientist who splits the atom, because God wants this energy to be put at man's disposal. But for good and not for evil, not just to enhance his power so that he may be the master and manipulate his life as he pleases, but that thereby man may be served, sufferings relieved, latent capacities developed, and justice increased upon the earth.

Vocation and Redemption

But there is more to be said, for it is not only the doctrine of creation that is relevant to the doctrine of vocation, but it is also the doctrine of redemption. It is true that for sweeping the floor well it is not necessary that the maid be a Christian, to have repented of sin, and to have found security in God's everlasting, unchanging love. All that is necessary is a good strong arm and the will to sweep, even if the motive be to earn a "dollar" and stand in "good" with the boss. Likewise, it will not make a better scientist if he is humble before God and thinks, as Kepler did, that in his scientific discoveries he is thinking God's thoughts after him. All that is necessary is that he know his stuff, stick to his task, have some creative imagination, and steady fingers.

Nevertheless, we cannot say that being born again to possess the mind of Christ will not make a difference in the total human situation from which the scientist cannot extricate himself. The scientist, as a man, must have something to say about the uses to which the results of his toil are put. Of course, the Christian is not the only one who wants the achievements of science to be used for constructive and not for destructive purposes. There are many men of good will the world around, of the most diverse kind of religious beliefs, some of them professing no belief in God, who nevertheless are dedicated to the service of mankind with a wholehearted devotion that will put many a professing Christian utterly to shame. The Christian has no monopoly on devotion to the advancement of mankind. Nevertheless, the one who is under the influence of the means of grace, the word of God and the sacraments, who keeps himself through daily prayer open to God, will have creative resources, as far as the true good of mankind is concerned, not granted to the one who is not so open. Moreover, he will have such a realistic estimate of the human situation, of the depths of human sin, of the pervasive power of pride, particularly in his own heart, that this must make a difference.

Therefore, we can only urge that the gospel be allowed to exert its life-giving power on all men and that there be a creative division of labor in a universal priesthood, where each one serves with the gifts that are peculiar to him. Whatever paradise we are entitled to on this earth will then be ours, but it will be held with a light hand, knowing that we have here no abiding city, but that we seek one to come. It will have to be with a tragic sense of life, knowing that the only beyond tragedy is in the resurrection of the dead. This is what St. Paul meant by:

"It remaineth, that both they that have wives be as though they had none; and they that weep, as though they wept not; and they that rejoice, as though they rejoiced not; and they that buy, as though they possessed not; and they that use this world, as not abusing it: for the fashion of the world passeth away." I Cor. 7:29-31.

So the Christian will enter into the space age in the confidence that he has already entered into a new age in which all the conflicts of this life are overcome. This will give him the courage in faith to put all the gifts that God supplies into the service of love, ere that night comes when no man can work.

Chapter 4

WILL SPACE EXPLORERS DISCOVER GOD AND HEAVEN?

THE possibility of space exploration has given rise to a new category of jokes. There is, for example, the rather "corny" story of the jet pilot, whose navigation went wrong and who suddenly found himself in outer space zooming higher and higher, passing one sputnik after another. When finally he passed the moon, he could contain his consternation no longer and gasped, "Oh, my God," whereupon a deep voice answered, "Yes, my son."

This notion that God and heaven are up is a deeply ingrained notion, equally as ridiculous as supposing that God speaks through a beard in a deep, bass voice.

There is also the poem by Thomas Hood, including the lines:

> I remember, I remember,
> The fir trees dark and high;
> I used to think their slender tops
> Were close against the sky:
> It was a childish ignorance,
> But now 'tis little joy
> To know I'm farther off from heav'n
> Than when I was a boy.[35]

It may be a childish notion that heaven is up, and yet the whole question presents problems with which we shall have to deal honestly.

The Necessity of Anthropomorphisms

We should not, to begin with, however, rule out all anthropomorphic language about God and human analogies and figures of speech. It is obviously quite impossible for us to speak about God, to picture him with our mind's eye except in terms of that with which we are familiar. When God comes within the horizon of our knowledge and does not remain forever outside as the mysterious unknown at the edge of our consciousness, when he reveals himself he reveals himself on our level, in the forms of our space-time world. This is the meaning of the incarnation that "the Word was made flesh, and dwelt among us (and we beheld his glory, the glory of the only begotten of the Father), full of grace and truth." John 1:14. The mistake we should not make, then, is to confuse the creature with the Creator; confuse the medium with the one who is present in the medium, confuse the mask with the one who is wearing the mask.

The New Testament witnesses with one voice to the fact that Jesus is a man, a carpenter, and not some kind of appearance, a god temporarily in human guise, such as are found in all pagan mythologies. Yet it witnesses just as unequivocally to the fact that in him God is veritably present on the earth in immediate encounter with man. "I and my Father are one." John 10:30. So the human form, within the realm of our apprehension, is an essential element of the revelation. God can be believed in by us only as a God who sees all we do, whose heart burns with love for us, whose wrath is kindled by our disobedience, who nevertheless reaches out to us a helping hand. If we were to eliminate all these elements from our picture of God, we would not have the living God of the Bible but the philosopher's god, a no-god, an abstraction of the mind, a god from whom the mind has stripped everything that is offensive to it—a god pushed out into the great beyond, completely out of touch with men, a god who has not revealed himself, because to reveal himself means precisely to come within the realm of what men can conceive.

When we think of God in human terms, we must, however, be careful not simply to make a God in our own image. The old philosopher said that if a pig could think, his god would be glorified pigness. With the glory of pagan mythologies, the God of the Bible has indeed more in common than with the abstractions of the philosophers, because these gods do enter the realm of man's ken. They take an interest in his affairs. They help or hinder his undertakings, they approve or disapprove. They are not in men's minds, but living beings who meet men on the road of life, speak to them, challenge them, put their claim upon them, to worship and obey. This is also precisely what the one true God of the Bible does. But what a difference then! The God of the Bible is not simply all the human virtues personified—not just a bigger and better man. He is not a projection of the human mind. He is not made in man's image, but man is made in his. If there is one thing the witnesses of the Bible regarded as blasphemy, it was that men should forget the great gulf that was fixed between Creator and creature. "For my thoughts are not your thoughts, neither are your ways my ways, . . . For as the heavens are higher than the earth, so are my ways higher than your ways, and my thoughts than your thoughts." Isa. 55:8-9.

Yet when this God chose to reveal himself to man, he did it entirely in the medium of the earthly, in terms that we can understand, a thoroughly human life which spent itself utterly for man. The God who is "wholly other" and absolutely unlike man, revealed himself in absolute likeness with all men, where he was discovered only with the eyes of God-given faith.

The Changed Picture of the Universe

Of course our picture of the universe has changed radically since Bible times. The writer of Genesis and the people of the time of Jesus had a quite unscientific view of the world. Theirs was a flat, circular, platelike earth on which men dwelt. Above the curtain of the sky on which God had hung the lanterns of the stars to guide the wanderers, and the sun and the moon to regulate day and night and the seasons, was the abode of God and the angels, and at a later date, also of the blessed departed. Within the bowels of the earth was the place of the shades (Hades) in which the shadowy replicas of the departed led a nondescript existence, waiting for some kind of release. Among the ancient Hebrews, there was no doctrine of the immortality of the soul (as separable from the body), but there was the notion of a place of the departed "shades," which later gave way to a belief in a resurrection of the dead.

There was also, to complete the ancient picture of the world, easy traffic between God and men. God came and talked with Adam in the cool of the day. He sent his angels to minister to men. When someone served him faithfully, he sent his chariot to carry him home. Finally, after the eternal Son had become incarnate and walked the streets of men, he ascended from a mountain back to the place whence he had come. This is the simple frame of reference within which the Biblical drama takes place, if we look at it quite unimaginatively with the eyes of the scientist in search of the kind of facts accessible to the mind and the senses.

We must not suppose, however, that this was the only picture of the world in ancient times. Among the Greeks, to whom we owe so much, Aristarchus of Samos (ca. 250 B.C.), is credited with having been the first, not only to maintain that the earth revolves on its axis, but that it performs a yearly journey around the sun, so as to account not only for the alternation of day and night, but also for the changing seasons of the year. Here then was a heliocentric view which antedates that of Copernicus (1473-1543) by almost 2,000 years.

Nevertheless, the view of Aristotle (384-322 B.C.) and of Ptolemy (second century) prevailed, namely, that the earth and not the sun is the center of that universe which was accessible to them through observation with the naked eye and mathematical calculation. Aristotle worked with concentric spheres around the earth with God as the "Unmoved Mover" in the outermost sphere. Ptolemy, with an elaborate, complicated system of cycles and epicycles, succeeded remarkably in accounting for the observable movements of the heavenly bodies. Dante (1265-1321), used as the basis of his *Divine Comedy*, an imaginative elaboration of the Ptolemaic universe, with the earth as the center, with hell in its bowels arranged into various divisions for the manifold degrees of punishment. Around the earth were nine concentric circles (the moon, the planets, the fixed stars, the crystalline heaven) ending in the motionless heaven or empyrean. At the top of this outermost circle was the "rose of the blessed" and above that in a sort of halo, the angelic circles surrounding the throne of God.

All this, however, changed with the invention of the telescope (Lippershey, 1608), when the theories of Copernicus concerning the heliocentric planetary system were verified by Galileo (1564-1642). As we have noted, the church at first took a dim view of what appeared to them in contradiction to God's word. Martin Luther condemned Copernicus for his presumption. In 1600 Giordano Bruno was burned at the stake for insisting on a plurality of worlds, and harboring pantheistic notions, while Galileo was forced by the Inquisition to recant his iniquitous notion of a moving earth.

Now the church has accepted the changed picture of the universe in the realization that the Bible is not a textbook of science, but a faithful witness to God's acts of self-revelation. Today's picture of the universe, far from leading to scepticism and atheism, should serve to glorify the Creator. Sir James Jeans in his book, *The Universe Around Us*,[36] draws a model of the universe and gives us some idea of its immensity. First of all, it is necessary to know that space is measured in terms of light-years. Light travels at the rate of approximately 186,000 miles a second. A light-year is the distance it travels in a year, or 186,000 x 60 (a minute) x 60 (an hour) x 24 (a day) x 365 (a year), or 5,865,696,000,000 miles = one light-year. At that rate, the nearest fixed star is 4¼ light-years away, and others are thousands of light-years distant, so that we still see the light of stars that burned out before the birth of Christ.

Now we can proceed to construct the model of the universe. At the center is a pinhead, 1/16 of an inch in diameter. This pinhead represents the earth's journey (of 600 million miles) around the sun, traveling at the rate of about 60,000 miles an hour. This gives you the scale on which the sun is a tiny speck of dust 1/3400 of an inch in diameter, and the earth is too small to be visible even under the most powerful microscope. On this scale, the nearest fixed star, which we said was 4¼ light-years distant, would be 225 yards away, and if the model were a mile square, it would contain only about a hundred of the nearest stars. To contain the whole galactic system of which our solar system is a minute part, the whole model would have to be extended about 5,000 miles, which would make the whole business larger than the continent of Asia, on the proposed scale of 1/16 of an inch representing the earth's journey around the sun. But this is only the beginning.

In that part of the universe now accessible to telescopes there are about two million families of stars, similar to our own galactic system, each consisting of thousands of millions of stars, and placed at intervals of from 20 to 30,000 miles on the scale adopted. The Milky Way, which we see across our sky and which is the galactic system of which we are a part, contains some 100,000,000,000 stars. The spiral nebula Andromeda, nearest the earth, is 750,000 light-years away. Within the limits of 500,000,000 light-years, there are about 100,000,000 galaxies.

The immensity of this universe really staggers the imagination. But even this is not the end. Presumably space stretches far beyond what is accessible to present telescopes. Then we must take into account that light does not travel in what we know as a Euclidean straight line (such as we have in our squares and triangles), but in a curved line. This means that all lines in space will, if you extend them far enough, eventually return upon themselves. On our scale model, this would probably be after a journey of some hundreds of trillions of miles.

Another way of picturing this immense universe is to think of the sun as a speck of dust less than 3/1000 of an inch in diameter, with some of the other stars larger and some smaller. The total number of specks of dust would be that in three cubic miles of air at the rate of a million to the cubic inch. But, of course, these specks of dust would be spread at tremendous intervals. If you were to empty Grand Central Station of everything except six such tiny specks, then you would have an idea of the emptiness of space in even the most crowded areas.

The God of the Universe

What shall we say now as we compare this vast universe with the three-story universe of the Bible? The first thing that needs to be said is this: Just because the writers of the Bible were ignorant of the immensity of the universe we must not suppose, therefore, that their God was any less awesome or powerful or majestic or holy than would be the Creator of all this immensity. For the Biblical writers this is quite irrelevant. To be sure, they use anthropomorphic expressions. They spoke of God as covering himself "with light as with a garment," as stretching "out the heavens like a curtain," of laying "the beams of his chambers in the waters," of making "the clouds his chariot" and walking "upon the wings of the wind." Ps. 104:2, 3. But this does not mean that God was for them just the kindly man upstairs. He was the one upon whom they were absolutely dependent. Whatever existed in the world was there only because of the will of the Creator, without whom nothing could be. "By the word of the Lord were the heavens made." Ps. 33:6. His creative word brought all things forth out of nothing and continued to support them over the abyss of nothingness, into which they would disappear if he ever withdrew his supporting hand.

We are perhaps so used to associating the God of the Hebrews with the Greek gods of the Olympus or early tribal gods of nomadic desert tribes that we utterly fail to appreciate the chasm which separated the creature from the Creator in the prophetic mind. "He spake, and it was done; he commanded, and it stood fast." Ps. 33:9. And likewise, "He uttered his voice, the earth melted." Ps. 46:6. For Isaiah, particularly, God was the Holy One, before whom all "the nations are as a drop of a bucket, . . . as the small dust of the balance: . . . as nothing; . . . and less than nothing." Isa. 40:15, 17. Isaiah, for one would not have been impressed by our model picture of the universe, as though the God he worshiped were too small to be the lord of all this. Isaiah would simply have said, "I told you so. All this is nothing and less than nothing before God." What impressed Isaiah was the fact that there was a Creator and that he called out the starry hosts by number and knew each of his creatures by name, that is, each individual to the depths of its being.

The Holy

Among all people there is a sense of "the holy," which is not like the experience of any other thing, neither that of beauty or order or truth or goodness.[37] All men have this feeling of their own insignificance and at the same time of their own worth. This experience may come on the dizzying mountain heights, on the endlessly stretching plains, in the shut-in valley, at the seashore with its ceaselessly rolling waves, in the breath-taking fury of the storm, in the oppressive stillness of the calm, out under the star-studded night sky, in the dazzling brilliance of the noonday sun. It can come in loneliness or in the midst of the crowd, at the sight of beauty or of ugliness, the immensely great or the small. Suddenly there is the awareness of "another," who is not to be identified with any known thing. It is the uncanny, weird, exhilarating, devastating experience of the "holy." Before it a man trembles; he feels like running and yet he is rooted to the ground; he is drawn inexorably like a moth to the flame. This is the experience of the "unknown other" who is present to men in and behind all created things, of whose presence all men are inescapably aware, although they may then seek to deny it and to rationalize it all away.

So there is the story of the cowboy, the preacher, and the Englishman who stood surveying the Grand Canyon. The cowboy said in amazement, "Don't it beat hell!"

The preacher said piously, "The heavens declare the glory of God and the firmament showeth his handiwork."

The Englishman quipped, "What a jolly plyce to throw your old ryzor blydes!"

This is not the place at which to expand further on this sense of the holy. The first point to be made is simply that in this experience, man feels both his own insignificance and his own worth. After all, he is able to be aware of himself as against all that confronts him, and, however insignificant he may be, it is something to be aware of this insignificance. The second point is that he is aware of an "other"; he feels himself confronted, addressed, challenged, though he knows not by whom. And now the final point, more immediately related to our problem, is that the size of the universe has nothing to do with this. The simple shepherd, David, watching his sheep on a Galilean hill had this experience. The astronomer Kepler, peering into the sky, had this experience, as he saw himself walking God's footsteps after him. The earth-bound wanderer, creeping like a snail over the familiar valley that marks the limits of his known world, has this experience, no less than the jetpilot, all alone up there with emptiness and the stars. Who is it that is peering at you? You turn around and there is no one there, and yet you sense there is someone there whom you never escape.

The only thing we want to try to get across is that we should not look down our supercilious noses at the simple men of the Bible with their little three-story universe, as though they had nothing but a one-horse god, drawn to scale. Their God was the absolute Creator and Lord of all there is, and he can't possibly be any greater than that, even if you stretch this world in space and time to infinity.

Where Is God?

But now we must face the original question. Where in all this universe is God, and is there the possibility that as men explore space, they will come upon God's abode and the abode of the blessed departed? An obvious answer would be that if the universe is as immense as we have described it, then there is plenty of space in it for God and his angels and many a heaven tucked away in the distant reaches. Moreover, the question of space explorers coming upon such an abode would be only the most remote of possibilities. After all, if you keep in mind our scale model of the universe, even if men did succeed in getting to all the planets in our planetary system, this is still only barely scratching the surface of that vast, vast universe beyond, and we would—for many a generation at least—be no nearer the discovery of God. We shall, therefore, really have to go about this whole matter in a radically different way.

The Bible tells us that "God is a Spirit: and they that worship him must worship him in spirit and in truth." John 4:24. This sounds simple enough, but by no means does it solve all problems. What is meant by saying that God is spirit? Usually spirit is contrasted with matter. Matter is then thought of as hard and solid, something like rocks or diamonds, the more impervious the better. Even in fluids the base is somehow thought of as solid. It is the old notion of the atom, which literally means something which is no longer cuttable or divisible. These atoms were once thought of by the materialist Democritus (460-370 B.C.) as the ultimate building blocks of the universe. Even the souls or that which is thought of as alive as opposed to dead matter were thought of by Democritus as so-called slippery atoms which were able to maneuver in and out among the less maneuverable atoms. Although more tenuous and maneuverable, they were nevertheless "things" as we ordinarily think of them, and at death the whole being, including these "soul" atoms, just fell apart, "ashes to ashes and dust to dust." There is, on this view, no such thing then as an indestructible soul. There are only atoms and the void—only these tiny pool balls, clicking around in a vast emptiness.

On the other hand, those who oppose the materialists insist on another kind of reality, which is not accessible to the senses—touch, hearing, sight, taste, and smell, but only to the mind, and is, therefore, of the nature of mind itself. This is the so-called nonmaterial or spiritual realm to which belong man's soul, the immortal, uncreated and undying part of him, as well as God and whatever other spiritual beings there are. These are apprehended with man's reason, as when you think of numbers and geometrical figures and other abstract ideas, such as unity and freedom and love, none of which can ever be seen or touched or smelled.

Now this notion of a nonmaterial or spiritual world, accessible only to the reason and not to the senses, worked all right until it became apparent that the stuff of which the world is made isn't the solid kind of building material it was once thought to be. Even among the ancient Greeks, and, of course, since the rise of modern science, there has been the realization that the stuff of which the universe is made is more like spirit than so-called matter. As we have stated, it is now thought of as electrochemical energy which is not at all itself accessible to the senses. It can neither be seen, touched, heard, smelled, nor tasted. It can only be expressed by means of mathematical formulae, which describe the interrelation of the invisible forces. Of course, the underlying invisible energy gives rise to things that are accessible to the senses, that can be felt, touched, heard, smelled, and tasted. The observer can trace the path of the electron, but the electron itself he cannot see. He sees the effects of the energy; he can harness and turn it to his purposes, but the energy itself is as invisible as any god. So it just doesn't any longer make much sense to speak of a distinction between the material and the spiritual when we think of what exists in our universe of space and time.

We shall have to go about it differently then. It would take us too far afield to discuss all the different views that men have held and are still holding in their efforts to understand and control the world in which we live. So Bruno, whom we have mentioned as having been burned at the stake, drew the inevitable conclusion from his scientific discoveries. If the universe is so immense and there is a plurality of worlds reaching off into infinite space and there is no distinction between so-called matter and spirit and no heaven above the curtain of the sky, then if there is any God at all, he must be identical with this universe itself. That is the easiest way out. The pantheistic way. Everything (*pan*) is God (*theos*). Many philosophers, such as Spinoza and Hegel, have drawn the same conclusion, in a variety of ways. No use then searching for God, since he is in everything, and man himself is a fragment of the divine. If this is so, it matters very little by what name you call the whole process, matter or spirit or good or the absolute or the great all. On this view, then, the search is ended, and no space explorer will ever get any closer to God than he is here on this earth, even though he travel to the farthest star, for God is everywhere and nowhere.

The "Hidden" God

Now one thing is sure, this is not the God of the Bible, nor is it that of the general religious experience, for as we have said, in it man is aware of being confronted by a "wholly other" whom he does not identify either with himself or with all that he is aware of, either through his senses or his reason. But before we go any further, one thing must be clear. There is much that we can learn from the designation that God is spirit. He really is not accessible to the senses of man. So often men do not take the notion of spirit seriously. Therefore, someone has described the common notion of God as a more gaseous vertebrate. There are those who think of God as accessible to the senses of certain people, the seers, who have visions of God not accessible to the ordinary mortal. This is not the place to pass judgment on the validity of visions of God, which God may or may not grant to certain people, but the point to be made is that—on the view here represented—God is not himself the kind of being who is directly visible to the senses, not even of those with specially keen senses, for then he would be part of the space-time world and not really the Creator of space and time and all there is beside the Creator himself. Moreover, then some men would live by sight and not by faith, and if anything is clear from the Biblical record, it is that we live now in the time of faith and that not until *time* itself is over will *faith* turn to *sight*.

All direct appearances of God, as though he were a space-time being may, therefore, be unequivocally branded as superstition and as pagan. A God who can be discovered by man through his senses, however these be augmented, by means of telescope or microscope, or by the inducement of a state of trance, is at any rate not the God of the Bible. A God whose abode could be discovered in the sky is, therefore, ruled out. Man simply lacks the organ for apprehending God through the senses. In this sense, God is completely hidden from man. No one can possibly say what God looks like. This accounts for the fact, in part at least, that the Old Testament people of God were forbidden to make any image of God in the likeness of the creature. "Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth." Ex. 20:4. That is why—quite in contrast to the heathen temples—there was in the temple at Jerusalem in the holy of holies nothing but emptiness.

If God is not accessible to the senses of men, then any such direct appearance of God must be branded as superstition. It puts God at man's disposal, and this is paganism. Just as in the presence of the holy, the proper response of man is silence—the complete silence of submission, awe and worship—there must be a closing of the eyes before God—so as not to be blinded by the sight of his glory.

That which characterized the holy of holies among the Israelites was, therefore, not an image of God, but in the tabernacle was the ark of the covenant, the sign of God's promise to men, his coming to them and his steadfast love for them.

This—so it seems to me at least—is most clear in the Biblical witness to the incarnation. All Christians, however they may vary in other respects, agree that the supreme revelation (making known) of God is in the man Jesus, called the Christ (the Anointed One). But one thing is sure: Jesus—as far as the senses could discern—was a man and no one ever seriously, during his lifetime, took him for anything else. He was not like the Greek god Pan, half goat and half man, so that he betrayed his divinity by the grotesqueness of his figure, his goat-smell, and his piping. To the senses, therefore, Jesus did not directly reveal God. If, nevertheless, some came to be persuaded that the God of all the worlds was present and active in him, however this faith came about, it was not through a direct visibility of God to the senses. The Old Testament writers, for all the visions of God they record, knew this only too well. "Thou canst not see my face: for there shall no man see me, and live." Ex. 33:20.

Man lives in a situation of estrangement from God, and an angel with a flaming sword guards the access to his lost paradise. This is the Bible's way of making clear that man in his existence has no direct access to God. If man is to become aware of God, it must be because God chooses to make himself known by himself taking the initiative. This is what happened in the revelation in Jesus, the Christ. The New Testament witness is unanimous in this. "No man can say that Jesus is the Lord, but by the Holy Ghost." I Cor. 12:3. Only because God himself made himself known in what is described as the sending of the Spirit by the risen and ascended Lord, did the meaning of the revelation become clear. All this is the vindication of the assertion that God never did, does not now, and never will appear to man directly for all to see, like Kierkegaard's prodigious green bird sitting on a fence post cawing in a most unusual manner. It is only to the eyes of faith that the living God is discernible. The rest is superstition.

God's "Dimensional Beyondness"

Now we can perhaps approach closer to our problem. The God of the Bible is not himself a part of the space-time world, nor is he identical with the so-called spiritual stuff of which the universe is composed. He stands *over* the world as its Creator and he always does so as sovereign Lord, and whenever he makes himself known to man, it is as the one who addresses man, speaks to him, and puts his claim upon him. This address is always in a "medium" and yet it is "immediate." This we would call a personal address, because that is the only way in which we can speak about it, and this ought also then to help us in some small way to realize how God is in another dimension from that of ourselves. This notion of a dimension can be made use of to show that the Creator, though everywhere present, may nevertheless not be accessible to our senses, and may not be reached no matter how far we travel in time or space.

What then are we to understand by saying that God is in another dimension from the space-time dimension in which we live. We have already ruled out the notion that God could be found somewhere in the space-time continuum as a space-time being. This is ruled out simply on the basis of the Biblical witness, that God is Creator and all else is creature, and this includes the whole space-time world. The Nicene Creed confesses faith in "God the Father Almighty, maker of heaven and earth, and of all things visible and invisible." This also rules out pantheism or the notion that God is altogether immanent (indwelling) in the universe. Creation is not some kind of emanation from God as light emanates from the sun or heat from a fire. God is not himself the electrochemical energy of the universe, but he is its fount and origin. The only way we have of making clear what is meant by the creative power with respect to the whole creation is to say that he brought it forth out of nothing and continues to support it over the abyss of nothingness. His word is the creative word which accomplishes what is spoken. "He spake, and it was done; he commanded, and it stood fast." Ps. 33:9. "God said, Let there be light: and there was light." Gen. 1:3. In no other way can the creative power of God and his distinctness from his creation be made clear.

A simple spatial transcendence must, of course, also be ruled out. We cannot put God altogether outside of space, in a spatial sense, because then he would simply be in another space. For the notion of being outside space is itself a spatial notion. Moreover, knowing what we do about the immensity of the universe, God would certainly be a long way off from our little home if he were beyond the reaches of the farthest galaxy of stars. We need also to recall what was said above. According to modern physicists, all space is curved. As was mentioned earlier, light (which is the only measure of the vast reaches of space we have) does not travel in what is a Euclidean straight line but in what in Euclidean geometry is a curved line. This has been experimentally verified, because light from distant stars is visible even though there are other heavenly bodies directly in front of them, as we are used to saying in terms of the straight Euclidean line. This means that the path of the light is curved. The curvature is, of course, so slight that it is not perceptible except in great distances, so that for ordinary measurements of space, Euclidean geometry is accurate enough. But space itself is not a Euclidean square but rather a vast circle, which goes back in a way to the ancient pictures, except that there is no way of escaping this circle and getting beyond it. If you travel long enough with the speed of light you will eventually, as we have already indicated, return to your starting point and you will never escape space-time or reach the abode of God.

If we speak of God as in another dimension, we can perhaps clarify what we mean by saying that he is both transcendent and immanent; that is, he is both outside of and within the space-time continuum in which we live. Karl Heim, in his book, *God Transcendent*,[38] tries to illustrate this by means of the ordinary three dimensions of space, each of which permeates the other and yet transcends it. It is possible for us to imagine just a two-dimensional world—where there is extension in length and width but absolutely no depth. This would be a "flatland" inhabited by nothing but "flat-landers." Creatures confined to this dimension would have no access to and could form no conception of the third dimension, which completely transcends it and at the same time is immanent in it, because the perpendicular crosses the horizontal at all points. A creature of three dimensions would include the other two, but not vice versa. The three-dimensional creature would be in a more inclusive dimension of which the two-dimensional creature could form no conception and to which it would have no access.

It is perhaps clearer if we imagine a being which is confined altogether to the time dimension in which it is in no sense aware of space. That is to say, it has only the sense of hearing as a succession of noises, one after the other, in time. Such a creature would have to be devoid of all sight or tactual or kinesthetic sensation which would enable it to form the ideas of extension or of above and below or alongside of or even of what is meant by space. It would know only the inner succession of events following one upon the other in time. In listening to music, such a creature would hear harmonies only as a blending of sounds and would not even conceive of what could be meant by two different notes played on separate instruments at the same time. An orchestra of many instruments spread out in space at intervals would not be conceivable. It would be confined to the before and after of its sole range of experience. Only if its eyes were opened to see, would the new dimension open up before it and it would see the piccolo player "piccoloing" at the exact time that the brass horn player is "umpahing." Now it would have to add another dimension to its experience. In addition to before and after, it would now know above and below, at the side of, in front of, back of. The creature of both dimensions (space and time) would transcend (go beyond) and be immanent in (indwell) the dimension of the one-dimensional (time) creature. The higher creature could enter into the experiences of the lower, while to the time-limited creature, the experiences of the time-space creature would be completely closed, so that it would lack even the power to imagine what they are like. While to the time-limited creature, the assertion of two notes being played at the same time would be a contradiction and, therefore, ruled out as impossible, it would be a quite ordinary and normal experience for the less limited creature.

In the same way, we can see how the dimension of the human and personal goes beyond and yet includes that of the animal. In the Bible we are told that Adam named the animals. That is to say, he could see into their natures so as to be able to control them. This is not a reversible procedure. Human beings live on a level which transcends that of the animals, just as animals transcend the level of the inanimate. Difficult as it may be to say just where the one leaves off and the other begins, there is a qualitative and not just a quantitative difference between man and the animals. Man has very much in common with the animals in respect to which he differs only quantitatively, as for example in the size of his brain and the amount of gray matter, the upright posture, and so forth. But there is a break-over into another dimension not accessible to the animal—that of selfhood, absolutely discrete individuality, a man with a name and not just a species with a name.

This is the dimension of the person, with self-consciousness and self-determination, with the power of rational thought, of memory, and of self and world transcendence, so that man can make both himself and his world the object of his contemplation. He can, so to speak, jump out of his skin and take a look at himself. He can contemplate not only himself but his world. Yet he cannot fully extricate himself from his involvement in space and time. He can look partly back into the past but he cannot survey the whole stream of time. He can anticipate the future, but he remains, after all, confined to the present moment. The past is gone forever and the future is not yet. In memory and imagination he projects himself into both realms, but only to a limited degree. He remains imprisoned in his limitations. He is free but not absolutely free. He can partially transcend himself and the world and so partly understand himself and his nature as well as that of the universe of which he is a part—but there are absolute limits. He cannot survey the whole, he cannot even see fully into the depths of his own being.

There is a false bottom there that he cannot penetrate. So he is confined to his dimension, that of space-time. Yet God hath set eternity into his heart. In the midst of all the things that change and decay and are no more, he reaches out to the unchanging, the eternal, the perfect, which he never attains. He frames ideas of perfection in beauty, truth, and goodness, but in so doing he still remains within the chambers of his mind.

Another simple analogy of a difference in dimension would be that of a physical object as over against a person with the power of thought and the free flow of imagination. It would be a contradiction to assert of the same desk that it could both be in the classroom and serve as John's seat during the lecture and also, at the same time, be outside in the park, blocks away, serving as a chance repository for the pigeons. But of John himself it would not be contradictory to say this. At one and the same time he is in the classroom and in the park. While his body rests benignly in the seat, his thoughts are far away. In thought he is out on the park bench; it is spring and his sweetheart is at his side. He's a lucky boy that he can interrupt the professor's dull lecture with such a pleasant diversion. He's not stuck with it as completely as the "captive audience" of the chairs. Yet even he does not find much satisfaction in this imaginary meeting. It has zest only in anticipation of the evening's escapade.

To gain a greater measure of freedom, we have to think of another dimension that transcends that of man in even greater measure than that of man transcends that of the physical object. To frame the notion of the other dimension in which God lives, we have to think of him as in no sense limited by space or time. Space itself is his creation and so is time.

The eternity of God is not like that of eternal, unchanging ideas which simply are and are not affected by time. Nor is eternity simply endlessly drawn-out time as a succession of moments. This kind of time, we have already said, is part of the space-time continuum. Creation, therefore, is not an event in time on a time line, but it is the creative beginning; neither is the so-called end of the world an event on a time line, but it is the end of decision-time itself that marks the consummation. Both of these notions, therefore, simply designate the limits of our dimension, beyond which is that of God which encloses and enfolds ours as an ocean surrounds an island. The whole infinity of time and space is enclosed and limited by that other infinity which is God.

This takes us back again to the notion of God's presence in the masks of creation, in a "mediated immediacy" —in another dimension that crosses ours at every point and yet is not accessible to us. We are accessible to him, but not he to us—unless he chooses to disclose himself. To do this, he doesn't really have to journey from somewhere else on a visit. He is already there. Only the veil has to be lifted from our eyes (revelation) before we can see. Then we see with the eyes of faith but never directly.

The Absoluteness of God

We have to return to the personal realm. Every person confronts us in such a way that we cannot enter into his own private world. We cannot stand where he stands, see with his eyes, take up his destiny, shoulder his responsibility, or even know his thoughts and feelings. He remains forever discrete and distinct from ourselves—with a certain hiddenness that we cannot penetrate.

Each time we meet another person, he constitutes a challenge to us. We are not alone in the world. Our eyes are not the only ones who see it. Our perspective is not the only one. There are all these other perspectives—these other eyes looking at things from other points of view, looking also at us, taking our measure, judging us, laughing at us, or perhaps approving or disapproving. Each one of these other persons constitutes, in a sense, another dimension from our own. Into the inmost secret of the other person as person we cannot penetrate. So God stands above us in impenetrable hiddenness, unless he reveals himself, and this he does when he puts his claim upon us. His transcendence is something we become aware of in an inner experience of our own limitations. We do not have life in and of ourselves, we did not give ourselves life and we cannot sustain ourselves in it. We are the creatures unto death. It is as though our arteries were cut and with every pulse beat we see our life's blood spurt out into the sand, from which we cannot gather it up again. But there is the awareness of another who himself is life, the very fountain of life, inexhaustible, unending. This is the one who transcends our finitude—the Creator of all life—the one who possesses ceaseless and unbroken vitality—the one who is absolutely free and self-sufficient—he depends on no one or nothing—he is under no constraint other than his own sovereign will—he needs or lacks nothing—he is not lonely for companionship so that it is this lack which causes him to bring forth a world. If he nevertheless chooses to create, it is because he freely wills it out of love in order that he may spend his love on his creation. The love of God, according to Kierkegaard, does not find, but creatively brings forth the object of his love.

"As the peaceful lake is grounded deep in the hidden spring which no eye can see, so a man's love is grounded even deeper in the love of God. If there were at bottom no wellspring, if God were not love, then there would be no quiet lake or human love. As the quiet lake is grounded darkly in the deep spring, so is human love mysteriously grounded in God's love. . . . As the quiet lake, however placidly it lies, is really running water—for is there not a wellspring at bottom?—so love, however quiet it is in its concealment, is ever flowing. But the quiet lake can become dry if its source sometime fails; the life of love, on the contrary, has an eternal wellspring. This life is fresh and everlasting; no cold can chill it, it is too fervent for that; and no heat can exhaust it, its coolness is too fresh for that. But it is hidden."[39]

The second point at which we become aware of the genuinely transcendent is when we realize that nothing earthly, no human person or task can lay its claim upon us absolutely. Of course, we meet people whose claim upon us and authority over us we recognize. We owe them respect and reverence and obedience, but unconditional submission and absolute obedience—that is quite a different matter. Every human being has feet of clay, as we sooner or later discover. To be so devoted to a human being that we would do anything he asked is, we would all be inclined to say, a perversion, a form of idolatry. No human being can lay this kind of claim upon another. For one man to possess another as his slave so that he can dispose of him as he pleases is monstrous!

No task can claim us absolutely, either. We use words very lightly when we say a man is wholeheartedly devoted to his work. Is it really with a whole heart and should it be with a whole heart, if it is a task that is merely an earthly one? There is only one who has an absolute claim upon us, to whom we owe unqualified respect, devotion, and obedience—the one who transcends and stands outside of and over everything that we call the world. "Thou shalt worship the Lord thy God, and him only shalt thou serve." Luke 4:8. "I am the Lord thy God, . . . Thou shalt have no other gods before me." Ex. 20:2-3. And that to which we give our worship and allegiance is our God. A man therefore always worships the true God or an idol. Only the one who completely transcends us and our whole world is not an idol.

There is a third point at which the meaning of the transcendent should be very clear to us, and that is at the point of the awareness of our insecurity and the threat of meaninglessness that is an inescapable part of our existence. There is absolute security in nothing that is of this world. No fortune, no circumspect living, no amount of science can stave off the moment of death. Death strikes in the most unexpected ways. Here the insurance statistician can give the figures. He can state the average life expectancy in any given area among a given group, even bringing it down to the professions. But just as with the subatomic particles, he can make absolutely no prediction concerning the individual. The exact time and place of every man's death remains a complete and impenetrable mystery, and there is no way of altering this. A man builds himself bigger and better barns and says to his soul, "Take thine ease," but then comes the summons, "Thou fool, this night thy soul shall be required of thee: then whose shall those things be, which thou hast provided?" Luke 12:19, 20.

Every man must die his own death. Consciously and alone, he must face this venture into the unknown. Will it be extinction, nothingness? Will it mean an advance into statelier mansions? Will it mean facing an all seeing, just judge? And what of all life's unfinished tasks, the partial patterns of meaning, the vain regrets, the unpaid debts, the hurts inflicted, the words that can't be recalled, the hours wasted—the unfulfilled hopes and longings, the adventures yet untried, the zest and hunger for life? "The supreme sloth," someone has said, "is not to want to live forever."

"Do not go gentle into that good night," says Dylan Thomas, "Rage, rage against the dying of the light."[40]

No one can face death really without fear and trembling. In the motion picture, *The Proud and the Profane*, the wife of a soldier suspects her husband of being a coward and he, knowing this, enlists to prove that he is not. When he is reported killed in battle, she tries to find out how he died and at last she does so. There is that unforgettable scene in the cemetery where the bleak crosses stand, row on row on row, as far as the eye can see, and the half-demented GI, who has made it his task to care for the graves, sweeps his hand across the silence. Indicating the graves, he says that his friends are there and that he has more friends there than anywhere else. When he is asked by the wife how her husband had died, he says that the man died like an amateur, like all of us shall, because none of us ever gets any practice.

There is the threat of meaninglessness. The sentence that breaks off in the middle can make no sense, and you can puzzle your brains out till doomsday—it will never make any sense. And beyond this insecurity, beyond this puzzle and tragedy of life, the partial patterns of meaning and all the danger and confusion and strife—there is the absolute of absolute security and absolute meaning. Looked at from this side, the tapestry is all confusion, but in the yon-side the pattern stands revealed. "The lines are fallen unto me in pleasant places." Ps. 16:6.

This is the real transcendent, the other dimension, the beyond the chasm, the absolutely, qualitatively different; absolute life and vitality, absolute freedom and self-sufficiency, absolute authority and power; absolute security and meaningfulness. Here we see as through a glass darkly, here we know in part, but there we shall know even as we are known. Not all the traveling in space to its farthest reaches will alter this fact.

The point is that we would simply be destroying the essential quality of human existence if we supposed that man could ever discover God short of the final moment of transition from faith to sight. Here we live by faith and must trust an unseen God. This is what it means that we are men and not God. If we were confronted directly with our Maker in all his glory, we would have no choice. The choice is possible to us because God remains hidden at the same time that he reveals himself to us and calls upon us to obey him in trust. It is no trick to trust a "spirit" who is at your beck and call whenever you choose to rub the magic lamp. This puts you in control. An omnipotent, wonder-worker who lavishes every blessing upon you, a titanic magician who dashes to your aid every time you whimper, it is no trick to worship. It is different with a God who hides his face and puts you to the test of whether you really trust his love, his promises, his covenanted word, or whether you are offended because in reality your trust is elsewhere, in your own ingenuity, your fine brains, or whatever else it may be.

In the Bible, revelation and faith are always corollary, which simply means that God never appears directly, that he is beheld only with the eyes of faith. And so it will be until time itself is over, which will be for each of us the time of our death. Space explorations can, therefore, in no way affect the choice before which man is put—namely, to trust the unseen and unseeable God of love, who demands obedience, or to believe that he is self-sufficient. Trust in God and love of the fellow men—

this is what is demanded of men and this demand is not to be toned down in the slightest by those who build the Tower of Babel to the outer reaches of space.

As for finding a spatial heaven and the place of the departed up in the sky, this notion has to be dismissed as categorically as that of finding God. This is so, not only because God is, as we have belabored sufficiently, in another dimension and, therefore, also his abode, but because the only fulfillment of which the Bible knows is that of the resurrection from the dead and a new heaven and a new earth. This is dealt with in more detail at another place. Here it is enough to emphasize that, strange as this sounds in some ears, the Bible knows nothing of the immortality of the soul separable from the body. It knows only of a resurrection of the total man from the dead.

Man in the Bible is a psychosomatic unity, and as such he passes through death to the resurrection and the judgment to the fulfillment, from faith through death and resurrection to sight. This makes all speculations about a place of the departed spirits absolutely futile. Here we must confess our ignorance and here it will become apparent whether or not we really trust God or want to continue to keep our feet on the bottom of probability. Elsewhere we have written about the different conception of time in the Bible. This is crucial here. We are not talking now of the succession of moments ticked off by the clock, but of the kind and quality of time. Now we are in the time of decision and of struggle, where we live by faith and not by sight. Through death and resurrection (which means being given life by God's own power to bring life out of death), we pass to that other time, the time of judgment and fulfillment, in which the whole creation is to share. Into this other time we cannot penetrate by scurrying off into space, no matter how fast or far. Some day we will all make this journey, but it won't be in a spaceship, but only when God's own sweet chariot swings low to carry us home. Neither will the space men of the future escape making this last and fearful journey. This is faith's conviction.

Chapter 5

LIFE ON OTHER PLANETS

AS C. S. LEWIS has pointed out in an article entitled "Will We Lose God in Outer Space,"[41] two diametrically opposed arguments have been advanced during the lifetime of this generation against the Christian belief in a God who would trouble himself about the people of this planet. At first it was said that it is scientifically impossible that there should be life on any other planet anywhere in the vast universe except this one. The whole universe is a vast complex of blazing suns or dead and lifeless moons with nothing but emptiness between, and nowhere are the conditions for life just right except here. Therefore, since this is so, it is both silly and presumptuous to suppose that a God would have created all this vastness just for man. Man is just a fortunate accident that turned up by chance. If there is a God who planned it all, he certainly was wasteful. No modern efficiency expert would tolerate this sort of thing—all these billions of years and these staggering reaches of space, and all he comes up with is this pea of a planet on which man cries out his pitiful years. Better ascribe it to chance and accident and meaninglessness. Man is a cosmic accident. It was even suggested that if a sufficient number of monkeys were given time enough and typewriters enough, they could, just by monkeying around, type off all the world's literature from Homer to Hemingway.

So Bertrand Russell wrote, "Mere considerations of scale suggested that perhaps we were not the purpose of the universe; lingering self-esteem whispered that, if *we* were not the purpose of the universe, it probably had no purpose at all."[42]

The greatest presumption would lie in supposing that a God could bother to become incarnate for such an insignificant flyspeck on the map of the world. Moreover, since the sun is burning itself out, the time will soon arrive (after a few billion years or so) when all the sun's energy will be spent, and it will be just another cold moon whirling its way through space, and all the sound and fury that marked man's brief sojourn will be swallowed up in silence. So man's whole history is reduced to a short and fitful episode between silence and silence, a meaningless cry in empty desolation.

Curiously enough, God was also ruled out by exactly the opposite line of reason, when scientists changed their minds and it was said that in all likelihood there was life on other planets. This was said totally to discredit the Biblical drama, according to which man is the center of the universe with all of it created for him to rule over as its crown. If there are other creatures, then how do they fit into this scheme? Is there more than one drama of the struggle between good and evil, God and Satan, going on at the same time? Did God have to become incarnate in innumerable worlds and die many deaths? What if the beings on the other planets were superior to men, or at least thought they were, and were anxious to win adherents for their beliefs, and so sent missionaries to other planets? So the mere possibility of other beings similar to man was said to make ridiculous the whole Biblical drama.

Is There Life on Other Planets?

What shall we say to this? First, what is actually the possibility of life on other planets? The opinions are divided. Some scientists of repute say that it is practically certain. Others are firm in denying it as a possibility. C. S. Lewis, who gave his fertile imagination free play in his two books *Out of the Silent Planet*[43] and *Perelandra*[44]—in which he depicts the most fantastic plant, animal, and human life on both Mars and Venus—is himself of the sober opinion that it's a very long shot that there is life comparable to ours somewhere in space. He points out that there is at present no shred of empirical evidence of such life![45] He wrote his books, therefore, not because he held it likely that Mars and Venus were actually inhabited by the creatures he so interestingly depicts, but because he used this medium in order to give expression to his own theological convictions and to dramatize what is involved in temptation and the fall, the true nature of innocence, mistrust of God, radical evil, as well as the possibilities of a right God-relation, in the case of unfallen creatures of God who, never having put their hand to the tree of the knowledge of good and evil, know only the good and nothing of evil. This is only to make clear that creaturehood is not identical with being a sinner, and that the fall of man out of the state of innocence is not a fall up but down.

But what is the possibility of life on other planets? Here is one opinion as expressed in *Rockets Through Space* by Lester del Rey: "Sadly, it now appears that we have very little chance of finding much intelligent life on the planets of our own Sun. Maybe there is life on Venus, but we do not know about it, and we cannot hope for it until we visit the planet. We have to assume that we are the only intelligent race in the Solar System, not because we are egotistic about our own importance, but simply because the indications are that it is true. The other planets simply are not well-designed for any kind of life that would develop intelligence.

"Does this mean there can be no intelligent life beside ours in the Universe? At one time science thought so, but this is no longer the best answer."[46]

Then Del Rey goes on to explain that there are many millions of stars with planets in space. "The chances are excellent that stars similar to our Sun will have systems of planets much like our own.

"Out of all these millions of planetary systems, there must be several worlds not too different from Earth.

"Will such worlds have life something like our own on them? Science cannot say positively, but the expectations are very good for such life."[47]

Then he goes on to say that the possibility of finding such life is still very remote in view of the tremendous distances involved and the slender chance of hitting upon the right planet when there are so many from which to choose. As for all the stories current about visitors from other planets, flying saucers with men from outer space, and the like, he concludes, "We have no real evidence to believe that we have been visited in the past or will be in the future."[48]

Here is the opinion of Cox and Stoiko: "Our galaxy, which is called the Milky Way, contains roughly 400 billion stars. One expert astronomer, Dr. Gerard Kuiper, Director of the Yerkes Observatory, believes that about 10 billion of the stars do have planets orbiting around them. If we assume that our own planetary Solar System is typical, then we can estimate that there are at least *100 billion planets in our galaxy alone*. With over

100 billion galaxies in the Universe, the number of planets, with or without life, is multiplied to an astronomical figure.

"If these other galaxies are like ours, then at least 10 percent or 10 billion planets in each galaxy, including ours, are orbiting in a temperate life zone, at just the proper distance from their sun so that water, air, and vital elements would exist. With these basic chemical properties in abundance, then life of some sort probably does exist on these planets.

"Based on the mathematical theory of probability, it is therefore inconceivable that ours is the 'only' inhabitable planet of the 10 billion in our galaxy, where conditions are right for the evolution of life. It is possible that on other planets life has been evolving for millions of years longer than it has been doing on Earth. This fact is worth pondering, as we plan in the future to build spaceships to other star systems."[49]

But there are also reputable voices to the contrary. One of them is Dr. Loren Eiseley, one of America's foremost interpreters of Darwin, head of the Department of Anthropology at the University of Pennsylvania, and curator at the University's Museum. Dr. Eiseley, author of *Darwin's Century*,[50] is very positive that human life exists only on our planet. If, as he believes, the evolutionary process is due to the survival of the fittest based on chance mutations, then the chances of all the conditions favorable for the long process of evolution are, on the basis of probability, reduced to nil. ". . . it was Charles Darwin . . . who engineered what was to be one of the most dreadful blows that the human ego has ever sustained: the demonstration of man's physical relationship to the world of the lower animals. It is quite apparent, however, that there is an aspect of Darwin's discoveries which has never penetrated to the mind of the general public. It is the fact that once undirected variation and natural selection are introduced as the mechanism controlling the development of plants and animals, the evolution of every world in space becomes a series of unique historical events. The precise accidental duplication of a complex form of life is extremely unlikely to occur in even the same environment, let alone in the different background and atmosphere of a far-off world.

"In the modern literature on space travel I have read about cabbage men and bird men; I have investigated the loves of the lizard men and the tree men, but in each case I have labored under no illusion. I have been reading about a man, Homo sapiens, that common earthling, clapped into an ill-fitting coat of feathers and retaining all his basic human attributes including an eye for the pretty girl who has just emerged from the space ship. His lechery and miscegenating proclivities have an oddly human ring, and if this is all we are going to find on other planets, I, for one, am going to be content to stay at home. There is quite enough of that sort of thing down here, without encouraging it throughout the starry systems.

"The truth is that man is a solitary and peculiar development. I do not mean this in any irreverent or contemptuous sense. I want merely to point out that when Charles Darwin and his colleagues established the community of descent of the living world, and observed the fact of divergent evolutionary adaptation, they destroyed forever the concept of geological prophecy. They did not eliminate the possibility of life on other worlds, but *the biological principles which they established have totally removed the likelihood that our descendants, in the next few decades, will be entertain-*

ing little men from Mars. I would be much more willing to consider the possibility of sitting down to lunch with a purple polyp, but even this has anatomical comparisons with the life of this planet. . . .

"In a universe whose size is beyond human imagining, where our world floats like a dust mote in the void of night, men have grown inconceivably lonely. We scan the time scale and the mechanisms of life itself for portents and signs of the invisible. As the only thinking mammals on the planet—perhaps the only thinking animals in the entire sidereal universe—the burden of consciousness has grown heavy upon us. We watch the stars, but the signs are uncertain. We uncover the bones of the past and seek for our origins. There is a path there, but it appears to wander. The vagaries of the road may have a meaning, however; it is thus we torture ourselves.

"Lights come and go in the night sky. Men, troubled at last by the things they build, may toss in their sleep and dream bad dreams, or lie awake while the meteors whisper greenly overhead. *But nowhere in all space or on a thousand worlds will there be men to share our loneliness.* There may be wisdom; there may be power; somewhere across space great instruments, handled by strange, manipulative organs, may stare vainly at our floating cloud wrack, their owners yearning as we yearn. Nevertheless, in the nature of life and in the principles of evolution we have had our answer. *Of men elsewhere and beyond, there will be none forever.*"[51]

So that is one reputed scientist's very positive opinion. In view of the conflicting opinions and the complete lack of evidence, we shall have to reserve judgment and confess our ignorance, while admitting it as a possibility. The reported visits of the little men must simply be dismissed as having no basis in fact. You might as well take seriously the cartoon which shows the mechanical man from Mars walking up to the bubble-gum machine, staring at the glass panels and shouting, "Hiya, babe! Dig those googly eyes!"

Nevertheless, an answer is owed to the one who seriously questions what the existence of life on other planets will do to the traditional Christian belief as based upon the witness of the Bible, for the possibility of such life always remains.

Angelic Beings

First we must assert that there is nothing in the Biblical witness to deny the possibility of other creatures of God other than men. In fact the Bible speaks explicitly of the angels, the messengers of God, who surround his throne, sing his praise, and do his bidding. (*See* Ps. 68:17; Isa. ch. 6; Rev. 5:11.)

There are many, of course, who hold this to be figurative language only. At any rate, the descriptions of angelic beings sometimes given in theological treatises make you wonder whence all this knowledge. So it is said that the angels, as spiritual beings, occupy no space, while nevertheless possessing definite ubiety (that is, whereness). They are, in other words, like mathematical points. They are confined to a definite location in space and are not like God everywhere present throughout all of space. This gave rise to the familiar medieval argument as to how many angels could stand on the head of a pin. In order to compensate for their lack of omnipresence, it was said, they were possessed of "marvelous agility" so that, as God's messengers, they could move swiftly from place to place, presumably even in excess of the speed of light.[52]

We may well relegate such speculations, including knowledge of the exact anatomy and sex of the heavenly beings, to the same place where we put fairies and hobgoblins. It would nevertheless be a great presumption to deny the existence of other creatures of God, who unlike man, have not fallen into sin and thus become estranged from the Author of their being. In fact, there is something very vital at stake. That is the question as to whether being a creature of God necessitates also being a fallen creature. It is the question of whether you can equate sin and finitude. It is the question the philosophers have raised from time immemorial as to whether or not it is possible for a being to know only the good without ever having experienced evil. The assertion of the good angels is the assertion of this possibility. In the vision of Isaiah in the temple (Isa., ch. 6) he sees the Lord high and lifted up, seated upon a throne surrounded by six-winged creatures. With twain they covered their faces, with twain they covered their feet, and with twain they did fly. Thus is symbolized the proper awe which they manifest in the presence of the Holy One. To him they surrender, ready to do his bidding. They do not find such surrender to their true Lord to be servile bondage. In this service is perfect freedom. To serve thus is to reign, provided he whom one serves is the Lord of love, whose concern is altogether for the beloved. In no way can there be freedom for the creature which does not have this freedom in and of itself. The dependent creature can be truly free only in the joyful acknowledgment of this dependence. Here there is not that disastrous *hybris* (presumptuous pride) which marks the fall of man.

So there is this company that surrounds the throne, of which the Psalmist says, "Bless the Lord, ye his angels, that excel in strength, that do his commandments, hearkening unto the voice of his word. Bless ye the Lord, all ye his hosts; ye ministers of his, that do his pleasure." Ps. 103:20, 21.

And, in the words of St. Luke, "There is joy in the presence of the angels of God over one sinner that repenteth." Luke 15:10.

Christians sing as they prepare to meet the Lord who for them and for their salvation came down from heaven, this central miracle of God's condescension: "Therefore with Angels and Archangels, and all the company of heaven, we laud and magnify Thy glorious Name, . . . Holy, Holy, Holy, Lord God of Sabaoth. Heaven and earth are full of Thy glory; Hosanna in the highest. Blessed is He that cometh in the Name of the Lord." These words occur in the Communion Liturgies of nearly all Christian churches, Catholic and Protestant.

What poverty of spirit and imagination that will not allow this company of the unfallen, willing, obedient creatures of God! People have speculated idly about the long, interminable years that passed before God created life on this planet. How did he occupy himself through those long, dull, empty years? It's hardly an answer to say that he was making switches to use on people who insist on asking foolish questions. Remembering what we have already said about the relativity of time and how differently time is thought of in the Bible, it puts no great stretch on the imagination to think of this time as the time of the proper God-relation. It is the time of harmony and of unity. It is not that all is united in indistinguishable oneness, but that there is the proper relation of persons to each other, and each performs his proper function and there is no pride or boasting or jealousy or neglect, but life-together-in-love.

The angels, we are told, have plenty to do. They do not sit idly on a cloud. Eternity is not too long for them to sing their Creator's praise. In addition to that, they are God's messengers. They are the instruments of his providence. We may choose to discard the notion that everyone has a guardian angel. If we believe at all in providence, that is, in the opposite of chance, then this puts no greater stretch on faith than if we continue to believe in angels, fully realizing that whatever we say about them is human, picture language, and no more to be taken literally than when the poet speaks of the "rosy-fingered dawn." The absolute miracle of God's providential care nevertheless remains, though the evidence is overwhelmingly against it. If we believe that God watches over all his children so that no evil shall befall them, if we believe that "he shall give his angels charge over thee, to keep thee in all thy ways. They shall bear thee up in their hands, lest thou dash thy foot against a stone," Ps. 91:11, 12, then the evidence is too contradictory to be of any use whatsoever. For every instance of providential care, so-called, there is a negative one. When the sceptic was told to look at all the thank offerings that were heaped at the shrine of Poseidon, the god of the sea, by grateful mariners who had been saved by him from the briny deep, he said simply, "I want to hear first from those who drowned."

There is told the story of a little child who was climbing precariously along the edge of a cliff while an angel watched over him. When the child returned home, all bruised and bedraggled, he told his mother that he didn't believe in angels because, while he was climbing along the cliff, he kept looking back and didn't see any.

The believer points to the fact that the child returned safely to his mother's arms as proving providential care, while the unbeliever hears only the anguished cries of the millions of mothers whose children did not come back. "In Rama was there a voice heard, lamentation, and weeping, and great mourning, Rachel weeping for her children, and would not be comforted, because they are not." Matt. 2:18.

There is no alternative. Faith in providence must remain faith, and between faith in providence and faith in angels as His ministering spirits there is not much to choose. The hand of God remains absolutely invisible in either case. If, therefore, someone sees God's providence in the lightning arrestor, in the skilled hand of the surgeon, in all that modern scientists are doing to give a greater measure of security to man's precarious existence, who can say him nay? If he also believes in manifestations of providence for which there is no human explanation, who will say him nay?

We may reason quite similarly about the fallen angels and about the Devil. Here we are confronted with the full mystery of evil with which wise men have racked their brains from time immemorial without coming nearer to a solution. Radical evil, deliberate and willful, delighting in the infliction of pain, glorying in destruction, is always reduced to something else: absence of the good, a purely negative concept, a survival of bestiality, ignorance, a misplacement of some kind, a stage in a process of evolution, and so on. Or else it is given the stature of a god or of some kind of inherent principle of opposition which is as necessary to the good as darkness and light are necessary corollaries, and there can be no picture without its shadows. But in the context of the Bible there is Satan, creature of God, who rises up in rebellion, who is not content to be subservient and to find freedom in surrender, but would himself be God. To be sure, we can reduce evil to impersonal forces, concatenations of divisive forces that go beyond the will of individual men or of all human beings put together. To be sure, there are such forces. But it doesn't make much sense to call such impersonal forces evil. Evil we invariably associate with a will, a will that is free, that can initiate activity, that is responsible. If radical evil is, therefore, personified in the figure of Satan, the fallen angel, we have to recognize the limitations of our minds and our language. God, too, is not a person, in the exact sense that we are. We are made in his image and not he in ours. We mean that he is not an uncaring force, a lifeless idea, a principle, a lodestar shining uncaring in the sky. The God of the Bible is the living God who has a concern for his children, and this can, as we have said, only be put in anthropomorphic terms. So it is with the mystery of the Evil One in the world, the one who would not let us hallow God's name nor let his kingdom come.

Part of the trouble with modern man is that he thinks of the material as evil and of the spiritual, or nonmaterial, as good. It is not so in the Bible. There the world of matter that God made is good, the whole wide world, the good earth, the sticky leaves, the storehouse of energy within the atom. Evil, however, lies in the spirit, in the will. "For we wrestle . . . against spiritual wickedness in high places." Eph. 6:12. There are spirits of revolt. An alien spirit may take possession of a man, so that he wills precisely what he does not will. A whole culture may become possessed, leading to all the evils that beggar description, such as Buchenwald, Hiroshima, and others.

So again we may relegate all the fantastic devils of a weird imagination to the realm of superstition. Nevertheless, we are naïve and foolish, or we are defiant, if we think we can in this way get rid of "the mystery of the Evil One," the prince of these creatures of God who rebel against his sovereignty, the sovereignty of love—for God is love. To all who object and say that this kind of personalization is unnecessary in order to take seriously radical evil in the world, it is enough to say that we are limited by the very structure of our minds to think in such terms. It is *the mystery of the Evil One.* Each of these words is important. "The Evil One": This is the safeguard against making evil only negative and preserving for it the power of initiative, of willful rebellion. "Mystery": This is the safeguard against knowing too much. Before this mystery we are dumb. It, too, shuts our mouths. Here, too, as in the presence of the holy, we are reduced to utter silence. Here, too, we understand only that we do not understand.

Now the big question is, if we grant that there are other creatures of God, both fallen and unfallen, such as are symbolized in the Bible by the angels and by Satan and the spirits of revolt, are we to suppose that we would come upon these creatures in other worlds? This was by no means the intention, to say that such angels and devils would be discovered by man in the future. This is precisely the point. Such creatures belong to the unseen and unseeable world. Whether or not they exist can never be proven, just as the existence of God can never be proven. No more than God do they ever appear to men directly for all to see. If they are seen, this means they are seen in a strictly inward experience. They cannot be photographed any more than God can be photographed—or a gravitational field for that matter. The people of the future will not be the lucky ones some day to come upon God face to face. Time is not the savior. When God is seen face to face, then, we have said, the time of decision is over and it is the time of judgment. By the same token, the people of the future will not come upon those angels who surround his throne in glory and who are his constant ministers. This is beyond the veil. When we see what eye has not seen and hear what ear has not heard and understand what has not entered the mind of man, when we understand God's providence and plumb the mystery of his love, then, too, will we see the angels and rejoice in the victory over the Evil One. This is not accomplished by climbing to a star, but by passing through death and resurrection to judgment and to glory.

Unfallen Creatures on Other Planets

What was the point then in the analogy? Simply to admit the possibility of other creatures on other planets similar to ourselves, some of which may be actually living in an unfallen state similar to that of unfallen angels; or else in a fallen state similar to that of a fallen angel. Perhaps this has unnecessarily complicated matters. At any rate, we can address ourselves to the question of the possibility of the existence of creatures on other planets who live in harmony with God's will who know no evil, who delight only in the good, whose existence is not estrangement, who know no anxieties and frustrations, who do not hate and destroy and inflict pain on one another, but whose delight is in the law of the Lord, which they not only know, but also do. If such creatures exist, it would be to our shame, and perhaps also to our inspiration. Certainly it would constitute a new temptation, for we—fallen as we are—do not stand easily in the presence of uncorrupted innocence, of the good. We do not know what such creatures would look like, the degree of their intelligence, how vast the powers of their mind and how unclouded their vision. We do not know whether we could communicate with them, or if, when we did, how much we could really understand. It might be that they could understand us in a way in which we could not understand them, and that we would, therefore, have to allow ourselves to be instructed. This would again test our genuine humility, our willingness to learn, to recognize our limitations. Long enough has the so-called white race believed in its vaunted supremacy. The white race has no warrant for making itself the standard with which it compares the other races. The white man is discovering that in some respects he may possibly be the black man's equal and vice versa. By the same token we are not to make ourselves the standard by which to judge inhabitants of other planets. It is possible that we would have to learn to sit at the feet of beings much wiser than we to be instructed by them, much better than we to be censured by them, and called to turn from our evil ways and live. This would not make it any easier for us.

When the rich man, who had fared sumptuously every day and had clothed himself in purple and fine linen and had hardened his heart against the beggar at his door, finally saw himself in the true light, he asked that a messenger be sent to warn his brothers who were living in the same delusion. He was told with devastating finality: "They have Moses and the prophets; let them hear them. . . . If they hear not Moses and the prophets, neither will they be persuaded, though one rose from the dead." Luke 16:29-31.

This would apply also, in the matters of ultimate concern, to a possible encounter with unfallen and superior creatures of God. If it were a matter simply of knowing more, of having more scientific knowledge and, therefore, more power, then, of course, it would be a relatively simple matter. We could only profit from such contact, if we recognized our limitations, and let ourselves be helped. If they were genuinely concerned to help us, we could not lose. But constituted as we are, we would be suspicious. We would not trust their disinterested goodness, their genuine concern, and so we—judging from our past record—would not make it easier for them. This means only that our human situation would not be altered by such encounter. In this life, too, we meet people, who by God's grace are motivated by love that reaches out to help, and we shrink from it; we always want to know what the "gimmick" is. This is what a wicked and adulterous generation, seeking for a sign, did to the Christ—it nailed him to a cross. Our generation is still that same wicked and adulterous generation that crucifies absolutely unselfish love. If we met such a whole race of those motivated by unselfish love, what guarantee is there that we would not crucify that whole race—unless we ourselves first came to be possessed by that same love?

It is this whole problem of how we would encouter an unfallen race with which C. S. Lewis deals in *Perelandra*.[53] There we see an, as yet, unfallen Adam and Eve living in unspoiled innocence, being visited by two visitors from earth. The one tries to tempt them to disobedience; the other must try to prevent the victory of the tempter. If ever, therefore, other people were discovered who knew nothing of evil, it would be the urgent duty of those who have been born again into the new life in Christ to foil the tempter's power and to keep an, as yet, unfallen race from falling. This is crudely put in the cartoon which shows the space pilot journeying past a planet just as Eve is reaching out to the fatal apple. Frantically he tries to wave her away.

A Fallen Race

If it should happen that a race were fallen as ours is, then, of course, it would be the obligation of the Christian church to preach the gospel also to them. This would pose no particular problem provided, of course, it were possible to communicate intelligibly. This impossibility of communication is, of course, always a possibility. It is possible that creatures might be discovered whose reasoning processes differ completely from ours. What would we do then? It's a purely speculative problem. We cannot now communicate intelligibly with stock or stone or insect or fish. If this were the case, we would have to treat it like any other force or creature in nature. If it were friendly or beneficent, somehow it might be turned to useful account. If it were hostile, the human being would have to conquer it. That man should ever be conquered by a hostile creature of higher intelligence is, of course, always a possibility, but a Christian would share the conviction that this would not come to pass. The only one whom man need really fear is God in heaven. Jesus said: "I say unto you my friends, Be not afraid of them that kill the body, and after that have no more that they can do. But I will forewarn you whom ye shall fear: Fear him, which after he hath killed, hath power to cast into hell; yea, I say unto you, Fear him." Luke 12:4, 5. This does not, as is generally supposed, mean the Devil, but it means that God whom Jesus called "Father," and of whom he said, "I and my Father are one." John 10:30.

At any rate, this is one of those bridges we should not cross until we get there. The Christian would console himself with the thought that this is God's world—all of it to the farthest stars. He would recognize that all creatures, no matter where, are God's creatures and that in the mystery of God's purpose they, too, have a place. They, too, are the objects of God's loving concern. If they are responsible creatures they are responsible to the same God. If an I-Thou relation can be established with them, then these persons must be respected and they must not be manipulated, pushed around, used. That some kind of superintelligent monsters should appear from outer space is a nightmare we can reserve for those who have no ear or eye for the real problems that confront us now with all the bigots, fanatics, sadists, and self-righteous prigs we have here on our mother earth to contend with. Any encounter with another people will in all likelihood not be for many, many years. In the meantime, we have plenty to do.

The Doctrine of the Incarnation and a Cosmic Redemption

The point on which critics always fasten is that of the Christian doctrines of the incarnation and the atonement, according to which the eternal Son of God was made flesh on this earth and by his innocent sufferings and death not only atoned for the sins of the world but opened a new age for all the world. The problem, perhaps, becomes particularly acute when we consider atonement not just as a covering of the world's sins by means of infinite suffering love, but when the victory on the Cross is said to have cosmic significance. By means of the incarnation, the death and resurrection of Jesus the Christ, a new aeon has begun. The former was under the dominion of sin and death and it still remains so, for this is not simply a matter of dividing the calendar into B.C. and A.D. It means that there is one whole existence sphere which includes man and his entire world. This is designated by

St. Paul, Rom., ch. 5, as that of the first Adam. Adam symbolizes and contains the whole humanity that fell from God and came under the judgment of his wrath. All mankind is one in Adam, who rebelled against God. The whole creation is implicated by this rebellion. It comes under the rule and dominion of death.

This is not to say that sin is the cause of physical death. This is not a cause-and-effect relation. It is, rather, as in modern physics, a field of relations. It is, therefore, proper to say that man and nature are subject henceforth to corruption in this whole field of relations. The world and all its glory passeth away. This is mortality. All changes, decays, and eventually ceases to be. Man "bears about him his mortality, the evidence of his sinfulness,"[54] says St. Augustine. This is true also of all of nature which, for all its beauty, is pervaded by a sad sighing. Each fall we feel it with the falling of the autumn leaves, and when spring comes, the most beautiful days in their transiency forbode the winter that is to come. St. Paul says, "For the earnest expectation of the creature waiteth for the manifestation of the sons of God. For the creature was made subject to vanity, not willingly, but by reason of him who hath subjected the same in hope, Because the creature itself also shall be delivered from the bondage of corruption into the glorious liberty of the children of God. For we know that the whole creation groaneth and travaileth in pain together until now. And not only they, but ourselves also, which have the firstfruits of the Spirit, even we ourselves groan within ourselves, waiting for the adoption, to wit, the redemption of our body." Rom. 8:19-23.

Into the old reality, under the dominion of death, there has now come the new reality. St. Paul speaks of the righteousness which comes from God. This is the theme of his letter to the Romans: "The just shall live by faith."

Rom. 1:17. This means that there is given to man the gift of a righteousness which has in it the power of life. With it the dominion of death is at an end. There is an altogether new existence sphere. Jesus is the second Adam in whom a whole new humanity is contained. Those who are taken hold of by him, engrafted in him as the true vine, made members of his body, are raised together with him from the dead, and have eternal life. They are no longer under judgment and subject to death, but are freed from the judgment and given a new power of life. "I am the resurrection, and the life," said Jesus, "he that believeth in me, though he were dead, yet shall he live." John 11:25.

This implies a new life now that shall know no end. The Biblical view knows nothing of an immortality of the soul. It speaks only of resurrection of the entire man, the old man of corruption and mortality, raised to the new man of incorruption and immortality, I Cor., ch. 15. Together with the resurrection of the body, there is also to be a new heaven and a new earth. Christ is to come again in glory, down to this earth, and then there is to be a consummation of the whole creation, all of it attaining the purpose for which it was intended. The Book of Revelation, Rev., ch. 21, pictures this new heaven and earth as a city foursquare bedecked with precious jewels shining in splendor. It is a city foursquare—not all confusion and bewilderment, but straight, harmonious, meaningful. In it there shall be no mourning and crying, for God shall wipe all tears from all eyes. And joy shall be there! This shall be because the tabernacle of God shall be with men, and they shall have no need of the sun because the Lord God shall be their sun. The tabernacle in the Old Testament was the tent of meeting, the place where God was present to men. But it was a hidden, invisible presence, as we have said. In it there was no idol representative of the "wholly other" God. There was only the ark of the covenant, the sign of the everlasting promise the God of Israel had made with his people. This tabernacle was abrogated when the word was made flesh and dwelt among men. Here was God truly present among men in all the fullness of his grace. But his presence, too, was a hidden and invisible presence. The glory of the only begotten, full of grace and truth, was beheld only with eyes of faith. So also is his presence hidden wherever the word of the gospel is proclaimed and the sacraments administered.

But now—in the new heaven and the new earth—it is to be different. "The tabernacle of God is with men, . . . and they need no candle, neither light of the sun; for the Lord God giveth them light." Rev. 21:3-22:5. God, tenting now in the midst of men, not in hiddenness but in openness that all may behold his glory and bask in it! This is to be direct, all men receiving light and life no longer through the mask of the creature but in immediate encounter. The presence of God no longer in a "mediated immediacy," but immediate, direct, without medium, I-Thou, face to face!

It is quite clear that all this imagery springs completely the bounds and dimensions of our worldly existence. This kind of fulfillment is not possible, not even on the most distant star. This means indeed a new aeon, which the omnipotent God of love alone can bring about.

So what we have is first of all a new aeon in the midst of the old, where those who have been engrafted into Christ have been transferred from the kingdom of darkness to that of marvelous light. All such live henceforth in two ages—for they cannot escape this world in its dominion under death, while at the same time they are entered already into the new. We must constantly keep in mind the different view of time we have described. The new aeon is the time of grace, the time of forgiveness, the time of being held in faith. It is the time when in faith a man is already beyond the judgment. Then, however, comes the time of fulfillment that we have described—the time when the alarm clock strikes, and faith turns to sight, and all creation shares in the glorious liberty of the children of God.

To this now it is objected. This may have been a possible view when the universe was a little three-story affair and man its only inhabitant, but how is such a view of a cosmic redemption to be harmonized with a world in which both space and time are extended to infinity and there are all these other possibly inhabited worlds? How can what happens on this speck of a planet possibly affect the whole creation?

In the first place, we must simply admit the simple three-story universe view of the Biblical writers. Their imagery is necessarily in those terms. They thought of heaven as a place in the sky and of hell, the place of the departed shades, as a place in the bowels of the earth. They thought of Jesus as literally ascending into heaven and returning again from the place to which he had gone and refurbishing this earth itself which had been so disastrously affected by man's sin. They did not have to concern themselves about other worlds and how they would be affected.

Moreover, they expected this to happen during their lifetimes. Every time they gathered and partook of the bread and wine, as they believed their Lord had commanded them, it was in anticipation of the time when they would sit at table with him in the perfected kingdom of God—which would be, not in some distant heaven, but here on the earth. No Jew—filled as he was with a sense of the goodness of the earth—ever dreamed of escaping from an evil material world into a cloud-cuckoo-land of the sky where he would sit astride a nonmaterial cloud and strum a nonmaterial harp and produce nonmaterial music throughout eternity.

No, he had trumpets to blow and cymbals to crash and vocal chords with which to shout. That's why he believed in the resurrection of the body. That's why he couldn't think of the consummation of God's plans in any other terms except that of the resurrected Christ coming back to earth and sitting at table with them once more. This was the atmosphere of their celebration of the Lord's Supper—material elements of bread and wine which were at the same time the media whereby the benefits of the death on the Cross were given them, forgiveness of sins, life and salvation. St. Paul says, "As often as ye eat this bread, and drink this cup, ye do show the Lord's death till he come." I Cor. 11:26. There was the backward reference to the Cross and the forward reference to his coming again.

In the expectation of his coming again during their lifetimes, the first disciples were disappointed. Does this mean now that this invalidates their whole expectation, and is the dawn of the space age the final straw that breaks the camel's back? How are God's plans for all the universe to be fulfilled here on this earth, when this is not the center of the universe and there are all these other worlds?

A Revised Eschatology

There is no doubt that the expectation of a quite literally-taken return from heaven does need radical revision. If the return of Christ and the establishment of the holy city upon the earth are taken as ordinary space-time events which are comparable to the advent of some space man in a flying saucer who lands at a definite location, so that if a person didn't happen to be on hand, he would miss it, then this must be ruled out, because this misses the whole point of a return of Christ in glory and for judgment. If God appears literally in the sky, here in our hemisphere, then obviously the poor Chinese will be left out, which might suit the "one hundred per cent Americans" just fine, but doesn't say much for their Christianity. On the other hand, if Jesus appears like a giant rainbow in the sky, encircling the earth, for all to see, then we have again left the realm of sober description. This is picture language. Such an event once more springs our space-time dimension. This is not Sputnik 1012 with Jesus aboard instead of a desolate little pup.

Now is the time of faith when God does not appear directly for all to see. He is present to men only in the mediated immediacy of the masks, his creatures. As the gracious God, he was present in Jesus, the carpenter, and he continues to be so present wherever the gospel is proclaimed and the sacraments administered in accordance with that gospel. There he is seen, however, with the eyes of God-given faith—or by those who are offended. It will be different when the time of faith is over, for then the full glory of him who took upon himself man's flesh and bore all his burdens will appear for all to see. This will, by the very nature of what is involved, be a pronouncement of fearful judgment, for then all men will recognize him whom their sins have pierced. At the same time, it will mean peace and joy for all who see that this suffering love of Christ on the Cross saves them from the judgment.

There is no point in speculating about when this day will come to pass—to try to figure out its nearness or remoteness. This again misses the point. This day will come as a thief in the night. This day will come for each of us during his lifetime, we know not when, when our summons comes, and we pass from this time of faith to the time of sight, judgment, fulfillment. This is where even our imagination fails us. The imagery of the Book of Revelation does, however, have a great deal to say. It is in terms of this earth, the things we know and have handled and have learned to cherish—all these are the things that shall reach fulfillment, as we have said. They are not just the scaffolding that can be discarded once the building of the future is completed, they are themselves a part of it. We should never abandon the this-worldiness and the earthiness of the Old Testament for some kind of spiritualized version of Christianity. When the Old Testament prophet speaks of the future, he speaks of swords being beaten into plowshares, and spears into pruning hooks. He speaks of every man sitting under his own vine and fig tree. He speaks of the lion and the lamb lying down together with a little child to lead them. All this is the indication that, in a way that far surpasses our ability even to begin to comprehend, the whole creation will reach its fulfillment. The last word is not strife but peace, not pain but joy, not tears but laughter.

What if those who knew of no other earth but this one, thought of it as centering on this earth! How could they be expected to do anything else? For them this earth was the center of their world, and it jolly well is for us, too! Because this happens to be where we are living, this is our base of operations, and the very fact that we intend to take off from here to distant worlds only makes it all the more the center of our world. And if we think of a fulfillment by means of the most radical transformation, then this will have to center for us where we are centered.

That's just the point. Not escape to somewhere else, but fulfillment of this world, our world. It has by no means been proven that there are other creatures and other worlds, and it may still just be that all this vast stage is the stage for this one drama of creation, fall, redemption, consummation. What a stage and what a drama! And what an author! C. S. Lewis has said that when the author comes out on the stage, the play is over.

Our ventures into other worlds can, therefore, for us, only accentuate the basic nature of our existence. Surely the precarious insecurity of it can only be heightened as we take off into space—and do not know whether we shall return. Here the full anxiety of the human situation should strike us full in the face. Once the sea was the symbol of insecurity, and men set out upon it not knowing where it would take them. In the Book of Revelation, it says of the new heaven and the new earth simply, "There was no more sea." Rev. 21:1. We have not yet conquered the perils of the sea, and even if we did, and every sailor could set the exact time of his safe return each time he said farewell to his loved ones, it still would not alter the fact that there would come a last farewell. And even if we do conquer the sea, there is still space, and space and its conquest will give us plenty to do. Perhaps we should substitute for the Biblical, "There was no more sea," "There shall be no more vast emptiness of space."

So that just about settles it. The task of life, its great adventure, its still unconquered worlds will go on, the horizons will always recede, the goal will never be reached, man will never achieve his heaven. Heaven can only come down, when time is over, when as St. Paul says in Eph., ch. 1, the mystery that was hid is fully revealed, and all things are gathered into one in Christ—

and the greatest mystery is that of all things that will one day belong to him we have been promised a share.

The fact that our universe has so expanded can, therefore, for the believer only enhance the Biblical drama of creation, fall, redemption, fulfillment. This is what it is for us—and we may well be the only fallen creatures—but if we aren't, then this only enlarges our task. God's love, his suffering, atoning, victorious love, needs still to be proclaimed from Jerusalem to Judea to the ends of the earth—an endless task—for each new generation born into the world needs again to have this God brought to it, and so do other creatures if such there be. If there be other creatures not in need of redemption, and if the time should ever come when they should come to us, then it could not alter the fact that we would still stand at the point of decision. Would we or would we not turn from our evil ways and live, when called upon by them to do so?

The possibility of life on other planets is not seen, therefore, as a threat to the Christian view of the drama of redemption. Paul Tillich raises this question, which he says, "has been carefully avoided by many traditional theologians, even though it is consciously or unconsciously alive for most contemporary people. It is the problem of how to understand the meaning of the symbol 'Christ' in the light of the immensity of the universe, the heliocentric system of planets, the infinitely small part of the universe which man and his history constitute, and the possibility of other 'worlds,' in which divine self-manifestations may appear and be received. Such developments become especially important if one considers that biblical and related expectations envisaged the coming of the Messiah within a cosmic frame. The universe will be reborn into a new eon. The function of the bearer of the New Being is not only to save individuals and to transform man's historical existence but to renew the universe. And the assumption is that mankind and individual men are so dependent on the powers of the universe that salvation of the one without the other is unthinkable."[55]

The answer Tillich gives is that the manifestation of the essential man (that is, true man, as he realizes his potential and is what God intends him to be and created him for) under the conditions of existential estrangement, that is, where in actual existence man is not in the right God-relation nor properly related to himself nor his neighbor, is restricted to historical mankind. In Jesus, as the Christ, we have the central event of human history which gives it its meaning. Here God reveals his relation to man.

"At the same time, our basic answer leaves the universe open for possible divine manifestations in other areas or periods of being. Such possibilities cannot be denied. But they cannot be proved or disproved. Incarnation is *unique* for the special group in which it happens, but it is not unique in the sense that other singular incarnations for other unique worlds are excluded. Man cannot claim that the infinite has entered the finite to overcome its existential estrangement in mankind alone. Man cannot claim to occupy the only possible place for Incarnation. Although statements about other worlds and God's relation to them cannot be verified experientially, they are important because they help to interpret the meaning of terms like 'mediator,' 'savior,' 'Incarnation,' 'the Messiah,' and 'the new eon.' "[56]

Then Tillich is willing even to go a step further: "The interdependence of everything with everything else in the totality of being includes a participation of nature in history and demands a participation of the universe in salvation."[57] As he uses the word "history," this refers to the human drama. History, by definition, takes place only where man as a center of decision enters into and shapes the course of events by his decisions. In this sense, there is no history on the subhuman level or anywhere in the universe where all we have is the interplay of forces, the cyclical course of the stars, the transformation of energy, as for example, the passage of water to steam and back again to water. The human level is distinct from the level of the subhuman. Yet this is a universe, and therefore everything in it is related to everything else. Nothing is completely independent of everything else. As John Donne said, "No man is an Iland, intire of itself; every man is a peece of the Continent, a part of the maine. . . ."[58]

It is impossible, therefore, that an event somewhere, even though it be on the tiniest of planets, should just sink into the ocean of time and disappear like an island that does not affect the mainland. Somehow, the whole is altered. The salvation effected here in this planet must therefore have cosmic dimensions. It reaches to the outermost reaches of both space and time (thought of as a succession of moments).

"Therefore, if there are non-human 'worlds,' in which existential estrangement is not only real—as it is in the whole universe—but in which there is also a type of awareness of this estrangement, such worlds cannot be without the operation of saving power within them. Otherwise self-destruction would be the inescapable consequence. The manifestation of saving power in one place implies that saving power is operating in all places. The expectation of the Messiah as the bearer of the New Being presupposes that 'God loves the universe,' even though in the appearance of the Christ he actualizes this love for historical man alone."[59]

Freedom for the Future

One thing is clear. If the occasion ever should come when earth-creatures have the opportunity of sending missionaries to other planets, then bringing them the gospel is not equivalent to bringing them our civilization, our social mores, our morality, our ways of thinking. This is the great mistake which the missionary endeavor has made in other years. The proclamation of God's love for man and his actual manifestation of it in Jesus, the Christ, is one thing. Its theological expression is another. This can be done only in a given situation where the implications of the gospel must be worked out. It was a mistake to come with a scholastic theology to a people who don't think in scholastic terms, as in India. There the gospel proclamation had to develop its own theological expression against that which contradicted it. So it must be if and when we send missionaries to other planets. There must be patient listening, a working out of understanding, a willingness to learn and to allow nothing to stand fixed except the gospel itself. If anything good may come from this hypothetical contemplation of missions to other worlds, it might well be the realization that the gospel is not to be confused with its theological formulation vis-a-vis a certain opponent and in a given historical situation. Much of the difficulty in communicating the gospel might have been avoided if this had been remembered. Many of the theological squabbles of the past might also have been avoided and much of the opposition to present-day theological restatements would disappear. In order that the same thing be said in a different situation, it must often be said differently. We do not now know what kind of theological formulation the space age will eventually produce, but it must preserve the continuity with the past and must not falsify the good news.

The second point that must be stressed has already been indicated. It is a new person, with a new orientation, a new center for his life, a life freed from bondage to self, a life motivated and empowered by love, which is in every moment to be born anew. This new life of love is not to be equated with the accepted moral standards of any given time or place. We must be content, therefore, not only to allow new theological formulations, but also to let reborn men and women find their own creative way to meet their own situation. Hate, fear, selfishness, jealousy, pride—whatever other manifestations of a wrong God-relation there are, will not change, wherever there are responsible centers of decision, standing ever against the God who addresses them and puts his claim upon them. Neither will justice and love and humility and faith and hope. What these words stand for must be lived and experienced, and this experience will be the same in every generation. In the power of the new life, men must then meet their particular destiny. This is the meaning of the Christian ethic—to do what love in that situation demands. The actual decisions of the space age we must, therefore, leave to men in the future.

Chapter 6

WHOSE PROPERTY IS THE MOON?

DO WE face the prospect of a Soviet moon, an American Venus and a Japanese Mars? At the time of writing, according to accepted principles of international law, the answer is yes. It's first come—first served. This is the opinion of Andrew G. Haley, whom we have quoted previously and who has been one of the prime movers in trying to bring about radical revision of international law to conform to the space age. Recently he wrote in a popular article, "Can Russia Claim the Moon?":

"If the Russians get to the moon first, they can claim it. If we get there first, we can. That is my opinion.

"The moon race between the U.S. and the U.S.S.R. is on, and the Mars race will follow. Just now it is a race without rules, and you can guess how badly rules are needed from what John Cobb Cooper told the American Rocket Society recently: . . . 'Every day that passes with no attempt at real international discussion of the legal status of space beyond the air space only adds to the chances for fatal international confusion and conflict.' "[60]

Elsewhere Haley writes much more explicitly:

". . . the body of (modern) international law is hostile, from the standpoint of both private international law and public law—including civil rules as well as rules of warfare—to the problems of travel and existence in deep space. Indeed, the first such projection might well imperil the earth satellite program unless there be drastic revision of existing rules of international law.

"In any event, no concepts of human law, civil or criminal, which are designed to be enforced on human beings, may be projected for the government of other intelligent beings who dwell elsewhere in Creation."[61]

An obvious rejoinder is that this is a matter to be settled by the experts on international law and by the United Nations; the Christian church and its theologians have nothing to say. But I think the Christian church has something very significant to say in an effort to prevent the repetition of the brutal exploitation and unjust colonialism that has marred the history of our planet. If there are natural resources involved in the conquest of other planets, as it is believed there are, then crucial moral questions arise to which the church owes an answer. Will the spoils belong to those who take the risk, whether this be privately organized companies or national ventures, or will some scheme of international co-operation be worked out? If there are intelligent beings on other planets, this raises the question of the right of prior possession. Will we respect their sovereignty?

In response to the question, "To whom will the planets and the airways belong?" a group of the churchmen solicited answered that they would continue to belong to God as they always had. This is true enough, but this is equally true of all the resources of our own planet which we continue to plunder. It is true of all man's possessions, that he has nothing that he has not received, and yet he continues to act as though it really were his own, to do with and dispose of or cling to as he pleases. Granted

God's ownership, we still need to decide who is to hold the planets in trust.

One churchman gave the answer that he didn't have the slightest idea. This is a safe answer, and perhaps a smug one, for none of us is clairvoyant. But it doesn't take much of a prophet to see what's in the making, when greedy eyes are already leering at the spoils and, to say the least, a first-rate prestige race is in progress.

The immediate concern is for some kind of definition by law concerning the freedom of flight over the territory of sovereign nations. This has an interesting history. As Haley has pointed out, in English common law private ownership of land extended from the earth indefinitely up to the sky and indefinitely down into the earth. These rights were, however, granted by the sovereign and could be requisitioned if adequate compensation was made, as is the case now under our own government when the public good demands the giving up of a private property.[62]

Haley then also points out the conflict between positive law and natural law. As a working definition of international law, he uses Hackworth's: "A body of rules governing the relation between states. It is a system of jurisprudence which, for the most part, has evolved out of the experiences and the necessities of situations that have arisen from time to time."[63] This refers simply to the existing body of laws. Then the question is whether this postive law, that is, a "law enacted by a government for the regulation of society" is the only kind of standard, or whether there is not also a natural law by which all positive laws are to be judged. This is the notion that there are certain universal, moral laws, known by all men and binding upon all. Aristotle said that natural law is that which has the same authority everywhere, and is independent of opinion. Before Aristotle, Socrates and Plato had argued against the relativism of the Sophists that there are ethical universals. Not every individual man is the measure of all things, but man, that is, universal man, is the measure of all things. In spite of the most bewildering diversity of approved moral practices the world around, there is nevertheless a most striking agreement upon the basic human virtues in all the cultures of all times. All positive law, therefore, has as its judge and criterion the natural law known to men the world around.

Following Grotius, the great sixteenth century codifier of law, Haley points out that modern jurists regard law simply as positive law. It was this actually existing positive law which granted and still grants to each nation absolute sovereignty over the space over its territory.

But there were also publicists of the past who advocated that international law should follow the law of nature and who on this basis advocated an association of sovereign states. Haley quotes Francisco de Vitoria, a Spaniard in the fifteenth century who was influenced by the exploitation of the Indian in the newly discovered lands, that " 'the law of nature is the law which natural reason has established among all nations.'

"Natural law is not intangible and nonexistent, as followers of the positive school of law insist. It is not imposed by a sovereign or a legislature; it grew up before either existed. It does not exist in code form and has never existed in statutory form. 'It is a state of mind, which is however a fact, that certain rights and certain duties were necessary in any and every society composed of human beings.' "[64]

Francisco Suarez in the seventeenth century advocated that associations of sovereign states were to form specific laws based on natural law. Suarez felt that natural law should be "distinguished from law of nations, however, for natural law is immutable and universal and originates from natural evidence, while the law of nations is changeable, not common to all, and of positive and human origin. The law of nations, applicable as it may be to the world community, is still founded on probability and the common judgment of men."[65]

According to Haley, modern international law is the antithesis of what would be dictated by natural law. Walter Lippmann in his *Preface to Morals*,[66] and *Essays in the Public Philosophy*,[67] explores this problem further and advocates a return to natural law discerned by the reason.

This is illustrated by the positive laws granting absolute sovereignty over air space. This was not questioned until men began to fly. Haley goes on to say that in 1902, about the time the Wright brothers made their first flight, a convention was drafted by Paul Fauchille, for the Institute of International Law which "would have made the air free to commerce and travel, just as the sea"[68] and this convention might have been more successfully implemented had it not been for World War I, when nations again, particularly the neutral ones, asserted air sovereignty. In 1919, the Paris Convention for the Regulation of Air Navigation declared "every Power has complete and exclusive sovereignty over the air space above its territory."[69] Rights of "innocent passage" with certain restricted areas excluded were, however, granted by mutual agreement, while all military flights needed explicit permission.

Since then, Haley points out, the Air Commerce Act (1926) and the Civil Aeronautics Act (1938) further regulated air traffic. Late in World War II (1944), a Convention on International Civil Aviation again granted that "every state has complete and exclusive sovereignty over the air space above its territory."[70] This is now accepted by sixty-six nations, excluding the U.S.S.R., Communist China, Hungary, and Bulgaria. The International Air Transport Agreement (1944) guarantees freedom to scheduled international air service. The purpose of such legislation is obviously to prevent the flight of any man-made thing, whether manned or not, which will hurt or spy on any sovereign nation.

This is, however, where the present legislation reveals its inadequacy; "the International Civil Aviation Convention forbids the unauthorized passage of a pilotless aircraft 'over the territory of a contracting State' without limitation as to height."[71] In view of this, the launching of the first satellite, agreed upon by all the nations in advance for purposes of scientific observation during the International Geophysical Year, marks a great triumph for international co-operation in as much as any nation might have scotched the whole deal.

But now the problems begin. International law, such as it is, still grants to each nation absolute sovereignty over its own air space, subject only to such limitations as it voluntarily agrees to. But there is no agreement now as to how far up this sovereignty is to reach. As Haley points out, the suggestion of some "that national sovereignty should extend as high over the land 'as the atmospheric elements necessary to lift aircraft,' "[72] is unrealistic. The other suggestion, however, that national sovereignty extends "as far as their scientific progress . . . permits each state to control space above it"[73] simply asserts the Machiavellian principle that might makes right. Since, from our spherical earth, the lines extended from any nation would angle outward, we can see in what vast and overlapping claims to empire this would result.

Moreover, this does not solve the problem of what is in immediate prospect. The immediate problem arises from the fact that the orbiting of satellites will play havoc with any claims to sovereignty in the skies, once these satellites are beyond the stage of merely gathering scientific data, as they soon will be. So it is said, "If we place three, 24-hour 'stationary' satellites of the Earth into orbit over the equator at approximately 120 degrees apart, then the first truly transglobal communication link will be established. A communication link of this type could be used for hundreds of simultaneous telephone conversations between continents."[74]

But the communication will not be limited to hearing: "A universal series of radio and television networks circling the globe will be possible as a result of simultaneous global ocean-spanning television with satellites acting as relay stations. For the first time, man will immediately be able to *see* as well as *hear* events taking place anywhere on the Earth's surface."[75]

So the prophecy of George Orwell, in *Nineteen Eighty-Four*,[76] of Big Brother watching you at all times is about to come true. What will this do to nations attempting to keep their precious secrets from one another? This will simply mean an enforced open-skies policy.

Moreover, when manned space satellites are put into orbit—or even before that, with unmanned satellites—any military-minded nation bent on conquest could, from a space platform, launch its weapons of destruction on any part of the globe. Perhaps the military geniuses can think up some kind of defense against this. Perhaps we shall all start burrowing and say good-by to the sun and the stars and then the old three-story universe will be fashionable again. Deep within the bowels of the earth there will be the shades of men eking out their nondescript existence in Hades, or hell, if you prefer, and up in the empyrean will float the saints in their spaceships, while in between, on good old terra firma, the bats and the owls and the jackals will roam among the ruins.

So there is only one strategy that common sense dictates. For the present, until there can be a more solid structure of government for a united world, our only hope lies in the United Nations and in the speedy agreement upon international law that will conform to basic natural law, recognizing that all the nations of the world must co-operate for the common good. As Haley suggests, this will demand that no nation lay claim to any space beyond the aeropause and that ad interim legislation be passed against hostile use of this space over another sovereign territory.

Paul G. Hoffman has said, "We [the United States] should take the lead in internationalizing outer space under the control of the United Nations. We should advocate a permanent peace force under the United Nations. We should urge that technical assistance to other nations insofar as practical be channeled through the United Nations, and we should urge adequate financial support for the United Nations."[77]

There is thus no question about the urgency of the development of international law. In the address at Loccum, from which we quoted earlier, Andrew G. Haley writes:

> Wars, colonialism, and strong nationalism throughout the world have overwhelmed the sound basis of international law for which Vitoria and others have argued. Although phases of the law of nature and some principles of equity and morality are infused into it, international law today is largely self-serving municipal law.
>
> . . . Since what is needed, above all, in evolving rules of conduct for the opening of the new frontier in space, even in the

realm of anthropocentric law, is a set of principles which are beyond terrestrial disagreement, it is evident that our space jurisprudence must be based upon something other than present day international law.

Having affirmatively examined the *jus gentium* for good and sound principles we will accept the wisdom we have found and because of the inevitable decision which must be made, we will not look now to the long and sordid history of power politics, the implementation of the evil principle that might makes right, the endless records of treaties of convenience or to unprincipled writings of certain publicists and law givers.

The publicists and statesmen of the world must arrive at a new and uniform set of legal principles for space travel. The necessity for rudimentary solutions of initial problems is now on us. . . .

Slowly, but surely, the international nature of space travel regulation is being recognized. The administrative groups of many of the private international scientific organizations look at astronautics with a certain amount of timid horror, but these groups are being shocked into interest by robustious and learned members who recognize in astronautics one of the *truly* great challenges of civilization.

As there exists no body of statutory or case law appropriate for space travel, and as all problems in connection therewith are international in nature, an international formulation of space law must evolve.

This probably will come about in the usual hit and miss pattern. Finally, someone will object to the IGY satellites, or bigger and better non-IGY satellites will be launched and we will hear threats of war. The United Nations will have a look at the issues presented, or new multilateral treaties may be considered. In time piecemeal and stop-gap solutions will be adopted. But the problems will mount inexorably and the community of nations will be forced to take steps to create a body of space law.

At first we may hope only for an international body authorized to promulgate uniform regulations relating to take-off and landing procedures, and for the general safety of the people of Earth. Initially, space vehicles will be owned by nations or groups of nations and extension of international regulation will be fought jealously. But gradually and inexorably traffic will in-

> crease, new propulsive systems will be found which will reduce the cost of construction and operation, commercial enterprise will demand access to space, emigration will commence, meteorite mining will become an industrial objective, and all the ancient problems of law will be reasserted under vastly more complicated circumstances.
>
> Again there will arise in a new frame of reference problems of neutrality and belligerency, of nationality, domicile, statelessness, internment, asylum, sequestration, blockade, hovering, extraterritoriality, embargo, reprisal, boycotts, expropriation, piracy, contraband, customs, prize proceedings, emigration, immigration, mandates, colonies, tortious violations, civil claims, venue, jurisdiction, and so on.
>
> It may be too much to hope that civilization will contain these matters, a view which is cynical in an ultimate sense, because lack of containment would project our destructive forces and philosophies throughout the Universe. We cannot share this view as we believe space exploration and settlement will dignify and enrich mankind, erasing forever devastating economic problems and affording vistas of the mysteries of creation immeasurably more challenging and interesting than we now conceive of, and so engender a measure of tolerance and compassion that man will rise above his past.[78]

This is an admirably optimistic view, and the church, even though it may be more realistic about what is attainable, most certainly should lend its full support to the development of such international law based on universally recognized principles of justice.

The Roman Catholic Church is very explicit, as we have already stated, about its recognition of natural law, universally recognized by man's reason. Protestantism has not always been so clear or consistent in its position. Now, however, a greater measure of agreement is arising. In the first place, it is recognized that the God of the Bible is a different kind of God from the world reason (the logos) of the Stoics among whom the idea of natural law was most clearly developed. For the Stoics this is an impersonal, pantheistic matter. The universe itself is patterned according to reason and conforms to universal principles which are just. All that happens is, therefore, reasonable, and since this is the case, this accounts for the Stoic's stoicism, namely, the fact that he faces his lot, whatever it may be, with equanimity. It calms his passions, subdues his anger and his lusts and makes him a just man. Epictetus, the slave in the hovel, and Marcus Aurelius, the emperor on his throne, both indulge in the same soporifics of the reason and counsel the same "apathy." Each man's reason is part of the universal reason and with it he discerns the laws of the universe, the physical as well as the moral laws. This is the reaffirmation of Socrates' view that the truth is within every learner and need only be brought to birth by the proper midwifery. Here there is no really transcendent lawgiver whose word must be obeyed unconditionally. Man is really a law unto himself; he retains his autonomy.

It is different in the Bible. There the word (logos) is not an inbuilt world reason, but it is the word of the living God who creates the world through his word, addresses man, declares his love to him, gives him his commands. The Israelites, therefore, delighted in the law of the Lord. "The law of the Lord is perfect, converting the soul: the testimony of the Lord is sure, making wise the simple. The statutes of the Lord are right, rejoicing the heart: the commandment of the Lord is pure, enlightening the eyes. The fear of the Lord is clean, enduring for ever: the judgments of the Lord are true and righteous altogether. More to be desired are they than gold, yea, than much fine gold: sweeter also than honey and the honeycomb." Ps. 19:7-10.

The God who gives the commands is the God of love whose concern is for his people so that all his laws are for their good. The justice of God is not giving each man his due, but it is his righteousness which gives to each according to his real need, having pity on the fatherless and the widow and the stranger at the gate. It is to this righteousness of God that man must conform, serving his neighbor, that is, all his fellow men with whom he is put into contact, with whatever gifts he possesses and which the neighbor needs. This law of neighbor-regarding love, made much more explicit and freed from much of its particularism in the New Testament, is thus not a law which a man discovers within himself so that he really retains his autonomy and remains a law unto himself. This is the significance of the giving of the Ten Commandments on Mount Sinai, when Moses receives the commandments from God. Moses and the people of Israel are under the command of a "jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generations of them that hate me; and shewing mercy unto thousands of them that love me, and keep my commandments." Exod. 20:5-6.

So the law under which men are, by divine command, is the law of neighbor-regarding love. Man is under this law because he is under the command of the living God and not just because he has for himself discovered some universal principles according to which the world operates. It is no doubt true that the actual moral content is now roughly equivalent with what people the world around also discern as moral (not killing, not stealing, not committing adultery, not lying, not coveting, fidelity, chastity, honesty, kindness, reverence for life, and so forth). The difference lies in the lawgiver, "I am the Lord thy God, which have brought thee out of the land of Egypt, out of the house of bondage," therefore "thou shalt have no other gods before me." Exod. 20:2, 3. It is this deliverer God whom they are to acknowledge absolutely and whose will they are to obey unconditionally. Sin, therefore, is not just the failure to live in accordance with some self-discerned moral precept, but it is the unwillingness to surrender in the right way in trust and worship and obedience. The real sin is idolatry, the worship of other gods in which one puts one's trust, whether this be one's own self as it usually is, or some self-contrived, manipulatable god. What man needs, therefore, is to give up his idolatry and to be straightened out in his God-relation and to fear and love God and trust in him above all things, and then he can show this proper fear and love and trust in relation to his neighbor by serving him in the love with which he is loved. For this love, however, he needs to be reborn as we have indicated elsewhere.

Let us now return to the question of natural law. It is not denied that men, that is natural man, man as he is God-endowed with reason and other capacities, can discern the universal principles of morality. With these he can attain to what is called a *justitia civilis*, that is, a civil righteousness, a righteousness before the law, what ordinarily passes for being a good and just man who respects the rights of others. This makes for fair play, giving to each his due, treating equals as equals and unequals as unequals, observing the agreed-upon rules of the game. This is the actual law of the natural man. This is the natural law, reasonably discerned, by which existing positive law is to be judged and to which it should conform. No special giving of the law at Mount Sinai is necessary to reveal this to men. The code of Hammurabi and other codes the world around embodied these universal moral principles. The discernment of them has made "good" men the world around—Socrates, who drank the poison hemlock rather than break the laws that had given him protection all his life, Damon and Pythias who kept their pledged word to each other at the cost of life itself. A cloud of witnesses rises up of those who have fought for justice and the rights of men. It is possible for natural law and international law to safeguard these so-called basic "rights." It is possible to build a framework of just law that will, at least in principle, condemn the exploitations of the past, as man makes this new venture into space equipped with power for evil and good as never before.

But let no one be falsely optimistic. Let no one say that all these so-called good men are, therefore, able in their own goodness to stand before the highest tribunal. Let no one say that such people are, therefore, immune from the demonic possession of pride. Let no one say that they can do the just thing, the humanly fair and decent thing, unless they have resources in them that go beyond mere fair dealings. Emil Brunner has used the analogy of filling a glass of water. You can only fill the glass quite full if you are willing to let the water run over the glass. You can be just and fair only if you are willing to go beyond justice with love. Love must begin with fairness, with justice, as we all understand these words. This is so obvious in the present racial tensions. All the Negroes are asking for is justice, absolute equality before the law along with every other citizen of the United States, and then we talk sentimentally and condescendingly about "loving" them. This kind of love can wait until first we have been just. Or rather love, true love, must first of all take the form of justice.

This then is what the church of Jesus Christ may well say to the nations as they face this new era. Love demands a framework of international justice, backed up by force, for without this in a sinful world, justice becomes a travesty. There must be set up the proper machinery of law on an international scale to safeguard the rights of individuals as well as nations against those who have no respect for human dignity. The Christian church will also say that to get beyond justice to love, men and women must be born again to a new and different life which will make their service of their fellow men different. The natural man needs not only a supplementation of his natural powers by infusions of grace, but he needs to be radically reoriented in his whole being if his service of his fellow men is to be anything other than a refined form of selfishness.

C. S. Lewis, in contemplating man's advance into outer space and his possible meeting up with other creatures, is by no means as optimistic as some of the others whom we have quoted.

> We know what our race does to strangers. Man destroys or enslaves every species he can. Civilized man murders, enslaves, cheats and corrupts savage man. Even inanimate nature he turns into dust bowls and slag heaps. There are individuals who don't. But they are not the sort who are likely to be our pioneers in space. Our ambassador to new worlds will be the needy and greedy adventurer or the ruthless technical expert. They will do as their kind have always done. What that will be if they meet things weaker than themselves, the black man and the red man can tell. If they meet things stronger, they will be very properly destroyed.
>
> It is interesting to wonder how things would go if they met an unfallen race. At first, to be sure, they'd have a grand time jeering at, duping and exploiting its innocence; but I doubt if our half-animal cunning would long be a match for godlike wisdom, selfless valor and perfect unanimity.
>
> I therefore fear the practical, not the theoretical, problems which will arise if ever we meet rational creatures which are not

> human. Against them we shall, if we can, commit all the crimes we have already committed against creatures certainly human but differing from us in features and pigmentation; and the starry heavens will become an object to which good men can look up only with feelings of intolerable guilt, agonized pity and burning shame.
>
> Of course after the first debauch of exploitation we shall make some belated attempt to do better. We shall perhaps send missionaries. But can even missionaries be trusted? "Gun and gospel" have been horribly combined in the past. The missionary's holy desire to save souls has not always been kept quite distinct from the arrogant desire, the busybody's itch, to (as he calls it) "civilize" the (as he calls them) "natives." Would all our missionaries recognize an unfallen race if they met it? Could they? Would they continue to press upon creatures that did not need to be saved that plan of Salvation which God has appointed for Man? Would they denounce as sins mere differences of behavior which the spiritual and biological history of these strange creatures fully justified and which God Himself has blessed? Would they try to teach those from whom they had better learn? I do not know.
>
> What I do know is that here and now, as our only possible practical preparation for such a meeting, you and I should resolve to stand firm against all exploitation and all theological imperialism. It will not be fun. We shall be called traitors to our own species. We shall be hated of almost all men; even of some religious men. And we must not give back one single inch. We shall probably fail, but let us go down fighting for the right side. Our loyalty is due not to our species but to God. Those who are, or can become His sons, are our real brothers even if they have shells or tusks. It is spiritual, not biological, kinship that counts.[79]

This puts a different urgency upon the Christian church to continue to preach its message of law and grace, so that sinners may be converted and live and be the salt of the earth and the light of the world so as to preserve the world from self-destruction and to guide its feet into the way of peace.

Chapter 7

GOD-GIVEN CHALLENGE AND OPPORTUNITY

The Drive to Know

MAN'S God-given drive to know just for the sake of knowing, his insatiable curiosity, his lust for adventure—all these traits may be said in themselves to be justification enough for the reach into outer space. This is the way God has made man, and there is evidence enough in the history of science to show that the great discoveries were made, not by those selfishly and shortsightedly concerned to enhance their own power and prestige, but by those driven simply by the love of truth.

According to the Greek philosopher Plato, this is the *eros,* the love of desire, that lies at the heart of the universe and accounts for all the progress toward beauty, truth and goodness. Eros is the child of Plenty and Want. Man who is in need strives for fulfillment of his desires, chief among which is the desire to know, the insatiable appetite to stuff himself to the limits of his capacity with knowledge.

According to Aristotle, there is an Unmoved Mover who, himself unmoved, moves all things, not by lashing them from behind, but by drawing them from in front like a magnet. Man is the rational animal. This is what distinguishes him from the beast. This is the end (*telos*) for which he was made, as a knife is made for cutting and the eye is made for seeing: to exercise his reason, to know and thus to be the master. This search for truth is marred if some ulterior motive enters in. Then not only the purity of the motive is tarnished but the quest itself loses its urgency. The quest must possess a man so completely that other considerations of comfort and ease will be set aside and out of this disinterested love of truth will issue also the other benefits. When men are concerned with some practical need, it is as if this double-mindedness interferes with the clarity of their vision. There must be singleness of purpose if a venture is to succeed.

Seeking First the Kingdom of God

This is how the words of Jesus also are often interpreted: "Seek ye first the kingdom of God, and his righteousness; and all these things shall be added unto you." Matt. 6:33. You cannot, however, define the kingdom of God and his righteousness in terms of these other things, that is, the creature comforts of life, and then expect the gimmick to work. There is that all-important "if." If all other considerations are really eliminated, then the rest will be added. That is a mighty big if, which even the best of men do not succeed in attaining. In all human endeavor, even the most single-minded, there is some double-mindedness.

Besides, the seeking of the kingdom of God and his righteousness does, in the whole context of the Bible, mean something qualitatively different from the Greek love for truth. It means the kingdom where God's will is really done, where his lordship is acknowledged and his word obeyed cheerfully and unconditionally. The righteousness of God is, in the Bible, in one of its uses, equivalent with his love, when God deals with men, not in accordance with their deserts but with their needs, their real needs as only an omniscient God is able to know them. Therefore, the kingdom of God means a society of men who have their real needs met and fulfilled, where all institutions serve this purpose of allowing men to realize their full capacities and to come to the fullness of the stature of manhood in Jesus Christ. It means absolute equality of opportunity, justice and fairness. But it also means forgiveness, rehabilitation through love, through sacrifice through self-giving. It means really the kind of kingdom in which the relations of men to God are right, so that people become the clear channels through which his love and gifts flow to the neighbor. It means doing what, in each situation, love demands, even where that love makes strict demands and takes the form of strict justice. It means the giving up of autonomy to let the God of love really have his way.

The Power of Pride

So there is this demand for unconditional surrender and absolute purity of heart, together with the promise that if you have no eye for the benefits of such surrender, then the benefits will be there. But man is not capable of such single-mindedness. Somehow his eyes are still cocked, one hopefully at the reward, the other fearfully at the punishment. Most disastrously of all, pride, the desire for glory and recognition, the lust for power and for lording it over others always enters in and plays its disastrous role. In its most subtle form, pride is manifest in the passion for truth itself. A man will not admit that there are limitations upon what he can know, that there is here too a holy of holies which he may not enter but before which he can only kneel in worship.

We too often think of pride as merely some kind of snootiness possessed by a few particularly disagreeable and nasty people, but pride is a pervasive thing that is in all men and is the root of all evil in the creature who is not self-dependent, not the author of his own being, not a law unto himself and who, therefore, can be free only in submission to the Power on which he depends. The Greeks called this *hybris*, and it would help if we used this word to distinguish this mighty, titanic refusal to recognize limitations from the despicable, mean, little nose-in-the-air snootiness with which it is so often confused. In the Christian tradition, the figure of Satan is not that of some mean, contriving, nasty little devil, but it is the majestic figure of a fallen angel of light, who was not content to be less than God, who would not grovel at anyone's feet, who would himself be the benefactor of men and so make them worship him. This is also the truth in the Greek figure of Prometheus, the Titan, who stole fire from heaven and taught men all the arts and raised them from brutish ignorance to civilized beings, as Aeschylus has Prometheus say:

Once they were fools. I gave them power to think.
Through me they won their minds. . . .
Seeing they did not see, nor hearing hear.
Like dreams they led a random life.
They had no houses built to face the sun,
of bricks or well-wrought wood,
but like the tiny ant who has her home
in sunless crannies deep down in the earth,
they lived in caverns.
The signs that speak of winter's coming,
of flower-faced spring, of summer's heat
with mellowing fruits
were all unknown to them.
From me they learned the stars that tell the seasons,
their risings and their settings hard to mark.

And number, that most excellent device,
I taught to them, and letters joined in words.
I gave to them the mother of all arts,
hard working memory.
I, too, first brought beneath the yoke
great beasts to serve the plow,
to toil in mortals' stead.
. . .
Best of all gifts I gave them was the gift of healing.
For if one fell into a malady
there was no drug to cure, no draught, or soothing ointment.
For want of these men wasted to a shadow
until I showed them how to use
the kindly herbs that keep from us disease.
. . .
Deep within the earth are hidden
precious things for men,
brass and iron, gold and silver.
Would any say he brought these forth to light
until I showed the way?
No one, except to make an idle boast.
All arts, all goods, have come to men from me.[80]

Here in these lines, written 500 B.C., is reflected the spirit of science that has brought us to this space age. At the same time, there is reflected in this profound Greek tragedy, *Prometheus Bound*, the recognition that creativity and order are in constant conflict. Zeus is the god of order—of conformity, of the preservation of the *status quo*, of obedience to law; and without such order, life becomes chaotic and the war of all against all. But with it, it stagnates, unless there is at the same time proud and rebellious creativity which bursts the old bonds and bounds and steals the fire from heaven and begins the march of progress. So order and creativity are in tragic conflict. For the tragedians, this was the tragic nature of reality, and Prometheus remains bound to his crag with the vultures eating out his entrails—a suffering god, punished for his proud rebellion against law and order and yet only so serving mankind.

Now there is, I believe, a Christian "beyond this tragedy" in the resurrection of the dead and a new heaven and a new earth—while in this life a conflict endures, which is nevertheless different from the tragedy that Aeschylus saw. This is the fact that that power of creativity which did not have to be wrested from a reluctant god but was given as a gift to men (Gen., ch. 1) in order that he might conquer the earth and subdue it, instead of being used really for man's benefit, is abused and becomes destructive. Without the power of creativity, without this drive to know, to excel, to be the lord of creation, man would be but a clod. This makes him superior to the rest of creation. But it is this also that proves his undoing —for the power he has as a gift he abuses in wanton arrogance—and he abuses it precisely under the guise of service to his fellow men. Nowhere is this gigantic *hybris* so apparent as when a totalitarian state in conscious and deliberate defiance of a god above, makes itself into a god and is determined to give men what God has denied them —meaning in the end themselves to do away with the crisis character of life, where men are not to vegetate benignly but to choose which master they will serve and so fight a good fight, leaving the ultimate outcome to the Lord of history.

That is why, in the Bible, the image of God in which man is created is not his reason, but his love. God is not reason, but love, and he employs reason as the instrument of his love. And if man is to reflect what God is, he must reflect his love and put his reason, too, in the service of love.

The Power of Love

That is why, then, a proud desire just to know for the sake of knowing cannot be the final motivation, and neither can it be the desire to play God oneself and to correct his mistakes. The purity of heart that God demands is the purity of love. The singleness of purpose that seeks first the kingdom of God and his righteousness is the purpose to love even as one knows oneself to be loved. "We love him, because he first loved us." I John 4:19.

The desire to serve mankind, to free man from suffering, to enlarge his life by making available to him the goods necessary for life must therefore be free of the pride that glories in this service and so makes itself into a god. It is not, after all, then just the spirit of adventure and man's desire to know that justifies these explorations. To be sure, of short-sighted pragmatic concern they must be free. But the Christian can only say that the single justifiable motivation is love. Then the decision with all the unsolved problems on this earth will for the Christian at least be much more difficult.

We have said that there is to be no conflict between science and Christianity, but that the natural scientist is to perform his task in extending man's control over that which is manipulatable, while Christianity deals with matters of ultimate concern and of the I-Thou relation where there is to be no manipulation. Together, scientist and proclaimer of the gospel are to form a team, each one exercising a proper priesthood of service to mankind. The natural sciences make available to man the rich resources of God's world. Those who proclaim the gospel throw light on the perennial human situation and bring to man that which alone can give life meaning and end its tragedy, insecurity, and loneliness.

In the release of atomic energy, a fearful potency has been given into man's hands, which has dismayed the scientists themselves. As James B. Conant has said, "In the early days of the work on atomic energy there was a possibility that the constants of nature would be such that atomic energy for power would be possible, but an atomic explosive impossible. We all hoped this would be the case, though the probabilities were slight. In fact, I often thought in that uncertain period that this would be too good to be true—the universe just isn't built that way. So it turned out in fact. Science and its applications have given us marvelous drugs and ways of health, communications, transportation, luxuries of every sort; it has also given us the atomic bomb, the discovery of which was in a sense inevitable in a scientific age—only the timing was uncertain."[81]

Then he goes on to quote from Emerson's famous essay on "The Law of Compensation": " 'Every excess causes a defect; every defect an excess . . . . Every faculty which is a receiver of pleasure has an equal penalty put on its abuse. . . . With every influx of light comes new danger. . . . There is a crack in everything God has made. It would seem there is always this vindictive circumstance stealing in at unawares. . . . this back-stroke, this kick of the gun, certifying that the law is fatal; that in nature nothing can be given, all things are sold.' "[82]

This is, however, nothing but the pagan notion that there are two opposing forces in the world, darkness and light, Ahriman and Ahura Mazda, the negative and the positive, the yin and the yang. This is only to say that the trouble with the world is its finitude, its imperfection, its falling short of the ideal toward which it strives. In the final analysis, then, it is God's fault that there is a crack in all he has made, that we cannot have the sunshine without the darkness.

The Crisis Character of Existence

From the Christian orientation, the lifelong struggle takes on a different character. It is not the notion of a flaw in all that God has made. It is rather a recognition of the crisis character of existence and the fact that man stands always at the point of decision, to put it bluntly, between heaven and hell. This is how God made men and cut them loose from himself with the gift of freedom to trust him and serve him or to cut themselves loose from him in mistrust and rebellion. He put at man's disposal all the earth, with its fearful potencies. Everything man possesses is, therefore, a power for good or for evil. This is true of the hand that reaches out to heal or is raised to strike, of the eye that looks with delight upon the beauty of the world or roves covetously over it in order to possess it, of the mind that extends its knowledge in order to further the lot of all or in order to glory in it and with it to lord it over others. So man extended the power of his hand with a hoe to till the soil and a club to kill his brother. Now he has extended the power of his hand with tools and factories and atoms, and the same twin possibilities are there, only raised to the *n*th degree. We are all aware of what man can do in the way of destruction. We are also well aware of what he can do in the way of constructive good. This is the decision before which man stands now, has always stood, and will stand until time itself is over. This is his glory as a man, this is what it means to be created in the image of God. Any notions that man can evolve himself out of this place of decision and of fearful responsibility had better be dismissed as the worst kind of delusion. There is no room for a utopia on this earth, as the word itself indicates. It comes from two Greek words, *ou* meaning no, and *topos* meaning place. A utopia is no place.

If this is so, then all depends on a man's basic orientation. No matter how much he increases his power, there are points of absolute impotence which he cannot overcome. He cannot take away the basic anxiety of his life that results from the fact that he stands in his freedom as a center of decision before an unknown future. He is free but he is not absolutely free. He has power but not absolute power. He can see part of the way into the future but not all the way. There is no possible way for him to get that future absolutely under control. Before him is always the certainty of death, the possibility of a judgment and of being called to a final accounting. He is perennially anxious, therefore, not only because there is always the uncertainty of the future and the threat of extinction of his very being, but also because his moral self is threatened, his self-esteem, his moral integrity, his dignity as a man, his standing not only before the court of world opinion, which might possibly be mistaken, but before the highest tribunal of an all-knowing, righteous Judge who balances the scales impartially, is no respecter of persons, and makes no mistakes.

He is perennially anxious also because of his inability to take the tangled threads of life and weave them into a pattern himself. His partial perspective never encompasses the whole. He can never, as some of the philosophers have tried, see the whole universe in space and time, *sub specie aeternitatis*, from the point of view of eternity, that is, from a vantage point that is completely outside and beyond the involvement in space and time. This transcendent point of reference that will disclose to him the meaning of the whole he lacks completely.

And as for man's loneliness, it is precisely when a man is surrounded by those he loves, when he feels the wonder of their presence, eyes and hands, and hearts that shine through those eyes and take shape in those hands—it is then that the feeling of loneliness overwhelms man most. It is the most devastating feeling a man can have. He who has never felt it is a paltry soul fit neither for hell nor heaven. All these loved ones with whom our souls are knit as one, to whom we cling because we are not sufficient unto ourselves—a wife who yields herself to you and at the same time holds you and sustains you; children in whom you see your short life, your hopes and dreams extended into the future; friends who know your faults and bear with them, who laugh with you and weep with you—all these we know may be taken away from us by one fell messenger of doom after the other, until we sit like Job, alone on our dung heap, tempted to curse God and die. "I only am escaped alone to tell thee," Job 1:15.

St. Augustine was right: "For Thou hast made us for Thyself and our hearts are restless till they rest in Thee."[83]

"For he alone loses no one that is dear to him, if all are dear in God, who is never lost."[84]

One thing is absolutely sure. The advent of the space age cannot one whit alter this crisis character of existence, but can only accentuate it and bring home to us in most striking fashion who and what we are and how much we need the God who made us. It may be lickspittle and cowardly for a man to grovel before a god who is nothing but a giant Santa Claus or a titanic magician whose sole task is to cater to man's every whim. It is an altogether different thing for a man to be humble before his God and acknowledge his absolute limitations and to know from whence cometh his help.

So Kierkegaard writes, "The simple and humble thing is to love God because one needs Him. It may seem so natural that in order to love God one must raise oneself to heaven where God dwells: the best and surest way, however, to love God is to remain on the earth. It may seem so lofty a thing to love God because He is so perfect, it may seem so selfish to love Him because one needs Him: yet the latter way is the only way in which a man can in truth love God. Woe to the presumptuous man who would make bold to love God without needing Him! In the relationship between man and man there may perhaps be the possibility of such an enthusiastic love which loves a man merely for his perfection, but the prime condition at the basis of a man's love for God is to understand effectually that one needs God, to love Him simply because one needs Him. The man who most deeply recognizes his need of God loves Him most truly. Thou shalt not presume to love God for God's sake; thou shalt eternally understand that thy life's welfare eternally depends upon this, and for this reason thou shalt love Him."[85]

Think of what it means to set off into outer space, to leave not only friends and loved ones behind, but the whole earth and all the familiar pattern of things. Kierkegaard has said that to exist means to float in a frail craft over seventy thousand fathoms. The modern space pilot will be able to go that one better as he hangs suspended in vast emptiness, dependent upon the fortunate concatenation of a million and more different things for his survival. The perennial anxiety of existence is here heightened, as it is for so many a modern man, caught as he is between the seductive promise of twentieth-century science and its annihilating power. But the space man, lonely as a cloud, only faces the same decision as his earthbound brother. Where will he reach now for security—

ultimate security? He can't afford even the slightest fraction of a mistake. He has no margin of error that might have consoled him in the horse and buggy days. It is all or nothing. It is the strictest kind of either-or. Either himself and his own ingenuity or the everlasting arms.

It is the assertion of the Christian faith that it is the first alternative which men have from the beginning of their history chosen, that is, their own ingenuity. So they have become estranged from God, and the fearful consequences of that estrangement it takes no great seer to read from the world's history. We need only to read again what St. Paul says about the fearful judgment that has come upon the children of disobedience; all that fearful catalog of vices: "And even as they did not like to retain God in their knowledge, God gave them over to a reprobate mind, to do those things which are not convenient; Being filled with all unrighteousness, fornication, wickedness, covetousness, maliciousness; full of envy, murder, debate, deceit, malignity; whisperers, backbiters, haters of God, despiteful, proud, boasters, inventors of evil things, disobedient to parents, without understanding, covenantbreakers, without natural affection, implacable, unmerciful:" Rom. 1:28-31. In Ephesians, he says of the Gentiles that "having the understanding darkened, being alienated from the life of God through the ignorance that is in them, because of the blindness of their heart: Who being past feeling have given themselves over unto lasciviousness, to work all uncleanness with greediness." Eph. 4:18, 19.

In the pages of so much of modern literature we see reflected these alienated ones. No animal safely guided by instincts could ever reach such states of perversity. Man, liberated by the advances of science, from the drudgery of daily toil for a living, wanders about in these wastes, from diversion to diversion, unable to find peace—enslaved in his freedom as never before. Just because he has at his disposal so much, therefore, his condition is so pitiable. Therefore it is tragic! A thing thrown into the gutter and not being made use of, pearls cast before the swine, animals in their needless sufferings are pitiful—these arouse our indignation, perhaps, and our sympathy. *Man alone*, with his high destiny unfulfilled, is tragic. Before this spectacle we can only stand appalled that man who can reach so high can fall so low that he must abhor himself and seek to rid himself of himself—if he only could!

Beyond Tragedy

But there is a beyond this tragedy in the New Being in Christ—in another possibility for the old! This is what the Christian gospel proclaims, God creating new possibility where all human possibility is at an end! It is God's prerogative to do the impossible. There is life, therefore, out of death in the resurrection of the dead. There is forgiveness of sins in Him who bore the world's sins on the shameful tree. There is a new beginning after the irrevocable past has gone down the drain. There is a clean sheet on the ledger never yet having been written on. There is new life for the old in a new relationship, a new field of forces, in the body of Christ. "Therefore if any man be in Christ, he is a new creature: old things are passed away; behold, all things are become new." II Cor. 5:17.

Put off your old nature which belongs to your former manner of life, ". . . which is corrupt according to the deceitful lusts; And be renewed in the spirit of your mind; And that ye put on the new man, which after

God is created in righteousness and true holiness." Eph. 4:22-24.

This is the transformation that must take place in the space age as well as in any other age, so that man may enter into that genuinely new age, that came into being through God's own intervention in history. The space age is still continuous with the old and differs from it only in degree, as we fly faster, see farther, climb higher, descend lower, talk louder, live longer, reproduce more prolifically, and we can set no limits to this kind of quantitative increase. But there is no way by means of this quantitative increment to get over into a new quality of life. This new quality of life is separated from the old by a chasm unbridgeable from man's side. But God has bridged the chasm, not indeed with a bridge on which man walks across by degrees. What is required is the leap of God-given faith, when God himself carries you across. Here is required the one thing man as the natural scientist can never do, and that is to let go of the controls and let God take over. It is in this vein that we enter in the space age, into the new age by the rebirth through the Holy Spirit wherever the gospel is proclaimed and the sacraments administered in accordance with that gospel. "Except a man be born again, he cannot see the kingdom of God." John 3:3.

You Can't Turn the Clock Back or Forward

We all grow nostalgic for the simple life, the uncomplicated life, the unhurried life—especially those of us whose memories go back to the horse and buggy days. There was joy in a journey then. We have no taste, therefore, for this business of going to bed in New York and waking up in Timbuktu with nary an inkling of all the sights and sounds and smells in between. We mourn over the passing of the train, this symbol of another era, now passed—the puffing smoke, the slowly turning panorama of the countryside, the clanging bell, the screeching brakes, the grinding to a halt for a leisurely wait at the crossroads. We long for the good old days when everything was not in high gear, going who knows where, and there was time on occasion just to sit in the sun. Surely we have fallen on evil days. If only we could turn back the clock!

The prospect of supersonic travel and of journeys to the distant stars does not hold the same lure for us as for the younger generation. We know too much about all of man's inhumanity to man which the silent stars have witnessed through the years. It would be better to give those stars something finer to look at before we start infecting them, too, with our malady, destroying their peace, and marring their beauty.

There is another typical attempt to buoy up the flagging spirit. It is the pointing to the cosmic clock of which we have already spoken. In view of the vast distance we have already come in such an incredibly short time, there is hope for the future.

The Ever-Present Moment Before God

But it is not this kind of solace, that time is the savior, which we are offering. If we cannot turn back the clock, neither can we move it forward. There is no use trying to bring back the good old days, for if we had lived in them, we would no doubt have found them not so good and we would have longed for an earlier lost paradise. Our nostalgic looking backward is much more a loss of nerve and resiliency than a realistic facing of the facts. There is no use, either, in comforting ourselves with the future. It is "now" that we must live. "Now" is the appointed time. "Now" is the day of salvation. "Now" is the only time you or I or anyone else will ever have in which to live, this present moment, before God, and in it we shall always be called to meet the needs of this moment. Life in the space age, it is quite safe to say, will involve the same human problems and the same human joys involved in every today. There will be the same sadness when lovers part and the same joy in the homecoming. There will be the same temptations and the same sins. And there will be the same need for the God of love and forgiveness and resurrection, who can cover up all the past, open up a new future, and out of death bring forth new life.

Jesus was once tempted by the Devil in the wilderness to give people all they were clamoring for, to still all their hunger by turning the stones of the desert into bread, to give them complete security by putting all the angels of heaven at their beck and call, to give them a God who would demand no surrender but allow every man to be his own god, to make all the kingdoms of this world self-sufficient. Jesus withstood this temptation. Love itself withstood this temptation and went instead to the Cross. So the time of peace and plenty and security did not come, but in the midst of the struggle there was promised a peace that passes all understanding and a joy that no man could take away. There was a task to be done—the gospel to be preached and the new life to be lived.

So the space age challenges anew to the unceasing struggle and adventures of life. It is as though all those receding spaces in the heavens that stagger the imagination were the graphic symbol to us of the fact that the task will be never done. There will always be new worlds to conquer. Even while there are all the unfinished tasks here on this earth, already new horizons are opening, with new challenges, problems, and opportunities.

The Contradictory Symbols of the Bible: War and Peace

We have pointed out the possibilities for peace in the advance into space, and we must take this possibility very seriously and work for its realization. In the Bible we have contradictory assertions. The one is that wars and rumors of war shall continue until the Lord's return. The final battle of Armageddon in which history culminates is the most fearful of all. The other is the promise of a thousand years of peace when the Devil will be bound and the kingdom of God spread victoriously over the earth. We must try to see the truth in both these assertions. In a world of sinful men, the sword will always have to play its part. St. Paul says in Romans: "For rulers" (and this includes the whole structure of law with the power of enforcement behind it) "are not a terror to good works, but to the evil. Wilt thou then not be afraid of the power? do that which is good, and thou shalt have praise of the same: for he is the minister of God to thee for good. But if thou do that which is evil, be afraid; for he beareth not the sword in vain: for he is the minister of God, a revenger to execute wrath upon him that doeth evil." Rom. 13:3-4. Hence it is folly to beat *all* the swords into plowshares and all spears into pruning hooks. Some swords and spears must remain to provide for punishment against the evildoer, and inasmuch as we now have a weapon of destruction so fearful that none can escape it, this should be deterrent enough. Here the fearful power of the sword has reached, it would seem, the ultimate, so as to put the proper fear into the evildoer. This weapon of total destruction can be God's servant for our good. If we do wrong, we must be afraid, for the authority does not bear the sword in vain. Out of sheer self-preservation, therefore, the nations must adhere to law and justice. Then within the proper framework of order we can set no limits to what the gospel can accomplish where it is properly proclaimed in this task that shall never end.

You can't win the world for Christ once and for all, in this generation or any other, for each generation must make its own decision and must be won over again, but to the extent of this winning we can set no bounds. So we can perhaps do justice to the contradictory affirmations of the Bible. On the one hand we must continue in a sinful world to recognize the necessity of "the sword" in order to enforce a framework of justice within which the gospel can be proclaimed and men find true freedom. We must recognize, therefore, the continuing presence of evil in the world and must at all times be prepared for outbreaks of violence and manifestations of evil that exceed anything ever experienced before. On the other hand, we must not only be confident of the ultimate victory in a new heaven and a new earth that lies on the other side of the resurrection and the judgment, but we must set no limits to what a faithful proclamation of the gospel can and will accomplish in the hearts of men. A world of peace is always the one possibility which may become an actuality. Nevertheless, there is a worse alternative to such a world of peace, if that peace is bought at the price of robbing men of their freedom of responsible decision, their dignity as men created in God's image, and of reducing them all to robots. Against this the human spirit will always rise in rebellion.

Poverty and Plenty

There is another paradox in the Bible. Jesus, on one occasion, allowed the extravagant gift of love to be poured out upon him in lavish profusion, and to the objector he said, "For ye have the poor with you always, and whensoever ye will ye may do them good: but me ye have not always." Mark 14:7.

On another occasion he said to a rich young ruler, who clung to his riches, "If thou wilt be perfect, go and sell that thou hast, and give to the poor, and thou shalt have treasures in heaven: and come and follow me." Matt. 19:21.

This faces us with the paradox. On the one hand, we are told that the poor will always be there; that, seemingly, we can disregard their cry for a higher concern. On the other hand, there is the urgency of giving all we have to meet the needs of the poor as the keys to the kingdom.

So today, from the world's millions, the cry of need goes up and this remains, in one sense, always the prior obligation: It is said unforgettably in Brecht's *The Threepenny Opera:*

MACHEATH: You moral gentlemen who try to lead us
And keep us from each sin, each foul misdeed
Your prior obligation is to feed us:
To lead (why not?) but first of all to feed
Yes, you who love your paunch and our morality
Hear, mark, and learn one thing for it is late:
Though you finagle most ingeniously
Until you feed us, right and wrong can wait!
Or is it only those that have the money
Can enter in the land of milk and honey?
VOICE OFF STAGE: What does a man live by?

Macheath: What does a man live by? By grinding, sweating
Defeating, beating, cheating, eating, some other man
For he can only live by sheer forgetting
Forgetting that he ever was a man.

Macheath, with chorus off stage:
So, gentlemen, you must concede to me
Men live by foul misdeeds exclusively.

Mrs. Peachum: You preach that moral rules should be decreed us
When we should lift our skirts, when we should not
Your prior obligation is to feed us
To feed comes first—then you can preach
(why not?)
Yes, you who love your fun and our dependency
Hear, mark, and learn one thing for it is late:
Though you finagle most ingeniously
Until you feed us, right and wrong can wait!
Or is it only those that have the money
Can enter in the land of milk and honey?[86]

In a later speech, Peachum says: "You've forgotten the monstrous number of the poor. If they were to stand there in front of the Abbey, it wouldn't be a very cheerful sight. They don't look very nice."[87]

It is one thing to go to the theater and to be entertained by Brecht's magic patter of words and Kurt Weil's music; it is quite another thing to face the ugly reality. While the Russian lady weeps at the opera over the misery of the poor, her coachman freezes to death outside in the bleak Russian winter. While we sit at *The Threepenny Opera*, laughing at the ridiculous spectacle of the poor, their monstrous number is gathering and there is a mumbling and a muttering among the dispossessed of the world. As we have said, the standard of living in the United States is so high that if every nation lived as we do—unless other resources are developed, as they no doubt can and will be—the natural resources would in a few years be exhausted. Then we must also take into account the phenomenal growth in population, the decrease in infant mortality and the lengthening of the life span. How can the rest of the world fail to look with envious amazement at our wastefulness and extravagance? This may sound like rabble-rousing, but it is sober fact. The food that goes into the American garbage cans every day would feed millions of those who in their lifetimes have never known what it means not to have hunger gnawing at their vitals. This year, once again, we have a bumper crop, and the surplus goods are piling up and we don't know what to do with them. Our military expenditures soar into the billions so that the other kind of assistance we are willing to give other nations vanishes into nothingness alongside of it. Recognizing the absolute necessity of military preparedness against the vicious totalitarianism of the Communists, it has again and again been proposed that we follow the Old Testament injunction of the tithe, and appropriate one-tenth of what goes into military expenditures for winning friends for ourselves.[88] This is not advocated as a particularly holy or loving or even just thing to do; it is advocated simply as the "smart" thing. The only counter to Communist propaganda is not an unrealistic playing of Santa Claus but a down-to-earth, realistic sharing of our abundance in our own interests.

The Warning of the Prophets

This means an end of narrow isolationism. It means the realization of the oneness of the world and an interweaving of our interests. This is a common human insight. Then we must add to this the prophetic warnings that, like the Israelites of old, we are all too willing to apply to other nations but fail invariably to apply to ourselves. Nation after nation surrounding the Israelites came under the just judgment of a righteous and holy God.

We hear in rhythmic repetition, "For three transgressions of Israel, and for four, I will not turn away the punishment thereof." Amos 2:6. The punishment shall in each case fit the crime. The nations are guilty of violent, obvious sins of aggression: Because the Gileadites ripped up the women with child to enlarge their borders, therefore, the Lord will not remit the punishment thereof. How the Israelites lapped it up, particularly when the same judgment fell upon those closest to them, their own blood brothers, the people of Judah! Then they really gloated.

But then when the judgment struck home, then they turned deaf ears. "For three transgressions of Israel, and for four, I will not turn away the punishment thereof; because they sold the righteous for silver, and the poor for a pair of shoes." Amos 2:6. They that trample the head of the poor into the dust of the earth are to receive punishment. How he excoriated them then for their sins of social unrighteousness too close to home for them to see, their exploitation of the poor, their extravagance, their summer and winter houses, their needless indulgence, their sexual perversions.

"Woe to them . . . That lie upon beds of ivory, and stretch themselves upon their couches, and eat the lambs out of the flock, and the calves out of the midst of the stall;" Amos 6:1-4.

Woe also to those who sing idle songs to the sound of the harp, and like David invent for themselves instruments of music; "That drink wine in bowls, and anoint themselves with the chief ointments: but they are not grieved for the affliction of Joseph. Therefore now shall they go captive with the first that go captive." Amos 6:6-7.

As surely as the lion roars in the forest when he has found his prey, as surely as the snare springs up from the ground when it has taken something, so surely shall the punishment strike them. What fearful desolation Amos pictures, hunger, drought, exile, and captivity. (*See* Amos, ch. 4.)

In the midst of all their excessive religiosity, there is no health in them: "I hate, I despise your feast days, and I will not smell in your solemn assemblies. Though ye offer me burnt offerings and your meat offerings, I will not accept them: neither will I regard the peace offerings of your fat beasts. Take thou away from me the noise of thy songs; for I will not hear the melody of thy viols. But let judgment run down as waters, and righteousness as a mighty stream." Amos 5:21-24.

Likewise said all the prophets, calling to repentance, picturing the fearfulness of the judgment—"The day of the Lord is darkness, and not light." Amos 5:18. And to these prophetic voices we must add the voice of Him whom this generation more often pictures as weak and without character than as a man among men: "Woe unto thee, Chorazin! woe unto thee, Bethsaida! for if the mighty works, which were done in you, had been done in Tyre and Sidon, they would have repented long ago in sackcloth and ashes. But I say unto you, It shall be more tolerable for Tyre and Sidon at the day of judgment, than for you. And thou, Capernaum, which art exalted unto heaven, shalt be brought down to hell: for if the mighty works, which have been done in thee, had been done in Sodom, it would have remained until this day.

But I say unto you, That it shall be more tolerable for the land of Sodom in the day of judgment, than for thee." Matt. 11:21-24.

Anyone who saw the ruined cities of Europe, the ghastly devastation, the fire raids on Hamburg that claimed 120,000 in a holocaust of flame to rival Dante's *Inferno*, the 80,000 dead in Dresden in one night, the interminable lines of the horribly mutilated, the long, long winters of cold and starvation, the agony that beggars description and that a whole library of books could not retell—to say nothing of the horrors in the Pacific jungle warfare and on the cruel sea—must come to the conclusion that either all that happened was just mad nonsense, or else it was a fearful judgment come true. As in days of old—through the medium of a sinful nation—judgment comes upon a sinful nation, a recompense for *hybris* overreaching itself.

What in God's name makes us think that it can't happen here? What justifies our identification of the American way of life with God's way? By what right do we identify the swank clubs from which those of another skin color or from another economic bracket are barred with the church that is the body of Christ? Is it just crackpot fanaticism that points to the venality of public officials, the casual way with which we treat wholesale dishonesty, marital infidelity, and that same ugly catalog of vices which St. Paul associates with those who are estranged from God? (Rom. ch 1.)

We have said that the advance into space has its justification in response to the God-given urge to know. It has its justification economically and politically. It may even have its moral justification in that it may serve to unite a world now sadly divided. But it ought also to serve as a call to repentance, a call to take up more vigorously the unfinished business on this planet. The one we *must* do, and by no means leave the other undone. And in view of the great disparity between the little that is available for the things that matter and the vastly larger amounts now being spent in the arms race, the cry of the prophets of old had better be listened to. How much are we willing to spend on just distribution of the goods necessary for a human life—which is the purpose of the economic order; for equality of opportunity for all people to develop their God-given capacities, regardless of sex or race or belief; for really humane education that does more than develop trained technicians, but teaches men to think for themselves and enables them to act responsibly—and which is available to all—for the spread of the life-giving gospel and the banishing of superstition and crackpot religions on the earth? The pot cannot afford to call the kettle black. We must see ourselves, and not others, in the mirror of God's word. No prophet ever came to a people to denounce the sins of others, but to call his own people, whom he loved, to repentance. It was thus that Jeremiah wept over the hurt of the daughter of his people. "Is it nothing to you, all ye that pass by? behold, and see if there be any sorrow like unto my sorrow." Lam. 1:12.

It was thus that Jesus wept over his own city: "O Jerusalem, Jerusalem, thou that killest the prophets, and stonest them which are sent unto thee, how often would I have gathered thy children together, even as a hen gathereth her chickens under her wings, and ye would not!" Matt. 23:37.

There is, therefore, a God-given challenge and opportunity that comes to us as we stand at the dawn of the space age, but this new power given into our hands, as potent for evil as for good, should also be a call to repentance—to the task that will be for us forever unfinished—to do God's will, as it is in heaven, here on earth. The Christian believes that there are many who do God's will and who are children of light and not of darkness, even though they do not by name acknowledge him who is the true light that lighteth every man that cometh into the world. But he also believes that he who, by that grace of God which is not at his disposal, has been transplanted from the kingdom of darkness into that of marvelous light, has resources of strength and peace and joy that others cannot even understand. He, therefore, faces the future unafraid. His faith, that is to say, what God has done at the central point of all history, is the victory that has overcome the world. "Therefore will not we fear, though the earth be removed, and though the mountains be carried into the midst of the sea." Ps. 46:2.

Appendix

In an attempt to get some idea of how the churches are reacting to the new developments of the space age, a questionnaire was sent to the leaders of the major church bodies in the United States. Following are the answers given by those who responded and consented to having their remarks published. In each case, the answers represent personal expressions of opinion and are not to be regarded as official pronouncements of the respective churches.

Question 1

What do you think of the relation between science and religion (or Christianity), especially in view of this new break-through in knowledge and increase of human power?

"The new break-through in knowledge and increase of human power has enlarged the area of the known but not in a degree that changes the relationship between science and Christianity. Dr. Vannevar Bush put it well in a TV interview last winter when he declared that religion draws its conclusions from revealed knowledge, and science from that which can be validated by observation." —Frederik A. Schiotz, President, The Evangelical Lutheran Church.

"Copernicus, by his discoveries, raised all the basic theological questions which are pertinent to this relationship."—Eugene Carson Blake, Stated Clerk, the United Presbyterian Church in the United States of America.

"It seems to me that the break-through in science places upon religion a new responsibility not to oppose the advance of science but to join with the scientists in an effort to use the new achievements of science for the benefit of humanity. This will mean sometimes bold resistance to the use of the products of science for destructive purposes. As Gandhi used spiritual power to oppose the strength of the British Empire, so we in our day as Christians may well find that we have to stand personally against the use of scientific results for illicit purposes even at the risk of our own lives."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

"The relation between science and religion, it seems to me, does not change. In each case we are searching for the truth, and truth is truth wherever it may be found. Different procedures may be used in the different fields but the relationship, it seems to me, remains the same."—G. Bromley Oxnam, Bishop of the Methodist Church.

"The new 'break-through' to which you refer in my opinion underlines what should have been apparent to all but obscurantist religious folk and those who make a cult of science, namely, revelation does not give us a set of propositions about God's world but an encounter with God which places the facts given by science and by other disciplines into some sort of perspective or frame of reference. Human knowledge and power are to be received and used under a sense of the divine judgment and grace. There is no conflict unless religion is wrongly understood or science falsely absolutized."—Huber F. Klemme, Associate Director, United Church of Christ, Council for Christian Social Action.

"Science and religion represent two methods by which mankind has undertaken to deal with reality. The techniques and subject matter of science furnish us a part of the understanding of reality. Man is ever learning. Each significant bit about the universe tells him something more about the character of its Creator."—Frederick D. Jordan, Bishop, African Methodist Episcopal Church.

"There is nothing new in the relation of religion and science, save that space exploration has made the whole matter seem more serious to the uninitiated. Science, as always, is concerned with a description of the way things work; religion, as always, with the purpose behind them and the Author of them. To know *how* God works does not deny that he does work nor negate his purpose of creation: the establishment of communities of men (or other creatures) who respond to him in faith and love and are fulfilled by his grace."—W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

Will B. Davis, Manager, Committee on Publications, Church of Christ Scientist, wrote a general answer to the entire series of questions submitted: "We want to make clear . . . the awareness, support and participation of Christian Scientists in all activities which tend to a greater good for humanity. Mrs. Eddy once had this to say to a newspaperman's question about modern material inventions:

> Oh, we cannot oppose them. They all tend to newer, finer, more etherealized ways of living. They seek the finer essences. They light the way to the Church of Christ. We use them, we make them our figures of speech. They are preparing the way for us. (*The First Church of Christ, Scientist, and Miscellany*, p. 345.)

"One need only take note of the enlightened and thorough news coverage which the natural science editors of *The Christian Science Monitor* have given to all the natural sciences, including space travel, in order to grasp the deep interest the Christian Science church has in the natural sciences and their implications for society."

Question 2

Is the conquest of space counter to or in harmony with God's will, particularly in view of the many unresolved problems on our planet?

"I do not believe that there is any essential difference with regard to the will of God in man flying at 20,000 feet in an airplane, or traveling to the moon, or a planet in a spaceship."—Eugene Carson Blake, Stated Clerk, The United Presbyterian Church in the United States of America.

"In my judgment, God wills that we go as far as we are able in the conquest of space. The clash with God's will comes when our use of 'break-through knowledge' may be other than that which benefits man and honors God. From a Christian point of view, the unresolved problems at home do not exonerate us from addressing ourselves to the problems of space exploration. Neither is a justification for ignoring the other."—Frederik A. Schiotz, President, The Evangelical Lutheran Church.

"I cannot believe that the conquest of space is contrary to God's will. He gave us minds to use and if in using them we move out to fuller knowledge of the universe, well and good. After all, it is God's universe, and the act of Creation may have involved life upon many of the planets."—G. Bromley Oxnam, Bishop of the Methodist Church.

"I find it very difficult to answer whether conquest of space is in harmony with God's will. I can hardly believe, however, that the very modest conquest of space which has been achieved does more than add emphasis to the importance of our giving attention to the unresolved problems of our own planet."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

"In some sense, the conquest of space can hardly be called counter to God's will since there is some evidence that it is taking place! At the same time, man, as a responsible creature, is challenged with finding and doing the will of God in his moving into this new frontier."—Huber F. Klemme, Associate Director, United Church of Christ, Council for Christian Social Action.

"We do not believe that there is anything about the universe which God does not wish man to know. The unresolved problems of man's relationships to man arise not so much from his lack of knowledge of what he ought to do as from his unwillingness to do it. Perhaps the extension of man's activity into outer space is only comparable to the penetration of the great oceans a few centuries ago."—Frederick D. Jordan, Bishop, African Methodist Episcopal Church.

"Obviously the 'conquest' of space (which seems to me a silly term, although it is much used) is neither contrary to God's will nor illegitimate in any sense. God would have us know the Truth, which ultimately is a reflection of himself. If 'conquest' means exploitation in a bad sense, then this is sin; but so is any exploitation of the world by man for selfish ends; the problem is the same as ever."—W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

Question 3

Will space explorers discover God and his heaven and the place of the departed?

"In my own judgment this question must be answered in the negative because it reveals a naïve misunderstanding, both of the Bible and of the relation of eternity to space and time."—Eugene Carson Blake, Stated Clerk, The United Presbyterian Church in the United States of America.

The only answer given by Frederik A. Schiotz, President, The Evangelical Lutheran Church, was a categorical "No."

"In regard to the discovery of heaven and the place of the departed, it seems to me that place concepts are hardly proper when we are thinking in terms of the spirit."—G. Bromley Oxnam, Bishop of the Methodist Church.

"I should not expect that the space explorers will add very much to that quest."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

"I might say facetiously, yet seriously, that if people have not discovered God before they take off from this planet they are not likely to discover him in space. Heaven and the place of the departed are questions which will neither be raised nor solved by the exploration of space."—Huber F. Klemme, Associate Director, United Church of Christ, Council for Christian Social Action.

"We find nothing in the teaching of the Bible to indicate that outer space explorations will discover the abode of God or departed souls."—Frederick D. Jordan, Bishop, African Methodist Episcopal Church.

"Of course space explorers will not 'discover' God; 'spiritual things are spiritually discerned'; God is known by faith, not by exploration of remote areas of the created order."—W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

Question 4

What theological implications do you see in the possibility of other planets being inhabited? What does this mean for the Biblical drama of redemption through the incarnation and the Biblical eschatology? What about sending missionaries to other planets or receiving missionaries from them?

"I have no doubt that even our Biblical understanding of the drama of redemption is limited by our finitude. My faith in Jesus Christ is such that I believe His salvation would be relevant to all creatures in the universe made in the image of God."—Eugene Carson Blake, Stated Clerk, The United Presbyterian Church in the United States of America.

"There are theological implications in the possibility of other planets being inhabited; but a delineation of such implications will have to wait on further information: Are the other planets inhabited? If they are, what is the state of their creaturehood? This latter question would have to be answered before there is much purpose in discussing the questions you have posed."—Frederik A. Schiotz, President, The Evangelical Lutheran Church.

"It seems to me that if properly viewed, the wonder and the glory of Creation will be greatly augmented by our discoveries. While the eschatological views revealed in parts of the Bible are now being fulfilled, I would doubt whether the original authors of those conceptions saw them being brought about by the handiwork of man and through his scientific genius. However, I think the exploration does expand very greatly the sense of awe and of dependence upon God.

"As to sending missionaries to the new planets, certainly I would be in favor of sending missionaries, and if there are inhabitants of the other planets, I would hope that they would send missionaries to bring us any good news that they may have."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

"I cannot believe that there is a particular Biblical drama of redemption that applies solely to one part of the universe. Personally, I shall have to wait until we get into some of these other planets and find out what they think to ascertain whether we know the full story of God's relationship to man, and man's to God. For me, the doctrine of the incarnation is satisfying and sufficient, but my mind is open and it may be that God has been able to reveal himself even more fully to others because they were better ready to receive the revelation."—G. Bromley Oxnam, Bishop of the Methodist Church.

"This, of course, is a highly theoretical question. There is as far as I know, no Christian doctrine which categorically states that God's concern is limited to the humanity on the earth. If He has other creatures capable of knowing Him and responding to Him, and placed them upon other planets, they are also the objects of His concern. Whether they need redemption, as does man, would depend upon the history of their relationships with God. Does not our thought of sending them missionaries arise from our inherent conceit? I cannot see how anyone from the earth could be an effective missionary to such creatures unless it is man's intention to carry into the new situation all of the social and spiritual dislocations from which he suffers here."—Frederick D. Jordan, Bishop, African Methodist Church.

". . . My answer, briefly, is that since the Eternal Word is that hypostasis in Godhead 'by whom all things are made,' and is also (*cf.* Fourth Gospel and Colossians) the agent of redemption, that same word (who for us men was incarnate in Jesus) has doubtless a plan and purpose for residents in other planets which is of the same substance (to use Nicene language) with what he did and was in Jesus Christ. Alice Meynell's poem, 'Christ in the Universe,' says what I should want to say on the subject; and there is a brief theological discussion, with which I agree, by Eric L. Mascall in one chapter of his *Christian Theology and Natural Science*."—W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

Question 5

"To whom will the planets and the airways belong?"

"I cannot imagine."—Eugene Carson Blake, Stated Clerk, The United Presbyterian Church in the United States of America.

"As a Christian, I must affirm that they belong to God. To say more than this is to indulge in a guessing game." —Frederik A. Schiotz, President, the Evangelical Lutheran Church.

"When you ask to whom the planets and the airways belong, surely you do not wish a man to take the question seriously. How do I know? How does anybody know? They belong to God the Creator, of course. Suppose other planets are inhabited? Does this mean that we are to move in as imperialists to take them over? This kind of question is one that I doubt you are asking seriously."—G. Bromley Oxnam, Bishop of the Methodist Church.

"It seems to me that they especially belong to God. An international agency controlling space and airways leading out into space can do no more than bring some order into these explorations."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

"I should certainly hope that the United Nations would be recognized as the bargaining or negotiating agent in any dealings with human or rational societies in other sections of the universe, and that the airways within the earth's own jurisdiction would increasingly be brought under international control through the United Nations or some similar organ."—Huber F. Klemme, Associate Director, United Church of Christ, Council for Christian Social Action.

"It is conceivable that the major nations will undertake to stake out reserves upon the planets just as they did on Africa and on North and South America a few centuries ago. Morally, of course, the planets belong to the beings who occupy them now, if there are any such. If they are unoccupied, they are one of the resources which God has provided for all of the world and should be available to all mankind under some sort of international supervision. The airways also, like the oceans, are for all mankind, and no nation should seek to blockade them against another."—Frederick D. Jordan, Bishop, African Methodist Episcopal Church.

"I have no answer to this question, but I should hope that, under God, whatever controls are exercised will be by the United Nations or one of its agencies."—W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

Question 6

"What implications do you think that the conquest of space will have for international relations and for the achievement of a united world and permanent peace?"

"I do not believe that the conquest of space will essentially affect international relations, or the achievement of a united world and permanent peace. The block to peace is human sin and the only peace which we may expect will come from the saving action of Almighty God."—Eugene Carson Blake, Stated Clerk, The United Presbyterian Church in the United States of America.

"It enlarges the scope of the present problems in international relations; but there is no likelihood that it will contribute to world peace, except as the new knowledge and the power conferred may exercise some of the restrictive influence which fear of the H-bomb seems to provide."—Frederik A. Schiotz, President, The Evangelical Lutheran Church.

"The conquest of space may mean that weapons in orbit may be used to destroy other nations. On the contrary, it may be that this break-through will teach us a bit more of the common sense necessary for survival. I cannot believe that we are going to commit suicide and therefore I believe that all of these advances mean fuller understanding that is requisite to world law and order."—G. Bromley Oxnam, Bishop of the Methodist Church.

"Coming to the conquest of space, this does not create the problem of the development of the world community. That necessity is upon us even now, although the conquest of space and the possibility of communication or collision with the other inhabitants of our own planet, and perhaps others, would certainly intensify the question and make a solution more urgent."—Huber F. Klemme, Associate Director, United Church of Christ, Council for Christian Social Action.

"Many factors seem to be at work today making mankind more and more interdependent. Rapid transportation is drawing people closer together physically and multiplies their contacts with each other. This, in a way, tends toward a united world, but a peaceful world is yet something else. James, in his Epistle, tells the early Christians that their fightings arise from lusts within themselves. Excessive nationalism and racialism tend to make people see all others as potential enemies. This desire to see other people in some measure or degree less well off than those of our own class, race or nation, is one of the major factors in preventing peace in any area of our relationships—home, community, nation, or the world. The conquest of space may affect significantly military strategy and the war potential of various nations, but men will fight—with their fists and clubs or with missiles and atomic weapons as long as the spirit of anger, hostility, enmity, and hatred has sway in their lives."—Frederick D. Jordan, Bishop, African Methodist Episcopal Church.

"I should hope that such exploration might have the result of making men see themselves against a somewhat bigger background and hence show the absurdity of war, etc., but since man is a sinner, I'm not very sanguine about this; it is not further knowledge that will save us, but the forgiving love of God accepted by his children." —W. Norman Pittenger, Professor of Christian Apologetics, General Theological Seminary, Protestant Episcopal Church, New York City.

"If . . . agreements can be reached to allow further explorations into space, under international control, this exploration may well aid world peace."—Clarence E. Pickett, Honorary Secretary, American Friends Service Committee.

Notes

1. Donald Cox and Michael Stoiko, *Spacepower* (Philadelphia: Winston, 1958), p. xxii.
2. Wernher von Braun, "Space Travel and Our Technological Revolution," article presented at the American Rocket Society, New York City, Apr. 4, 1957, and the Evangelical Academy, Loccum, Germany, Feb. 28, 1958.
3. Andrew G. Haley, "The Law of the Space Age—Spiritual and Scientific Foundations," address before the Evangelical Academy, Loccum, Germany, Feb. 28, 1958.
4. *See:* Donald Cox and Michael Stoiko, *Spacepower* (Philadelphia: Winston, 1958), pp. 104-116.
5. *See:* Lester del Rey, *Rockets Through Space* (Philadelphia: Winston, 1957), pp. 61-65.
6. *See:* Donald Cox and Michael Stoiko, *Spacepower* (Philadelphia: Winston, 1958), p. 138.
7. *See:* Wernher von Braun, "Space Travel and Our Technological Revolution," article presented at the American Rocket Society, New York City, Apr. 4, 1957, and the Evangelical Academy, Loccum, Germany, Feb. 28, 1958.
8. *Ibid.*
9. *Ibid.*
10. *Ibid.*
11. *Ibid.*
12. *Ibid.*
13. *Ibid.*
14. *See:* P. J. McLaughlin, *The Church and Modern Science* (New York: Philosophical Library, 1957), p. 132.
15. "A Symposium . . . The Conquest of Outer Space," *National Council Outlook,* March, 1958, p. 5.
16. Andrew D. White, *A History of the Warfare of Science with Theology in Christendom* (New York: George Braziller, 1953), p. 26.
17. *Ibid.,* p. 26.
18. *See:* Arthur F. Smethurst, *Modern Science and Christian Beliefs* (New York: Abingdon, 1957).
19. C. A. Coulson, *Science and Christian Belief* (Chapel Hill: The University of North Carolina Press, 1954), p. 12.
20. *See:* John Baillie, *Natural Science and the Spiritual Life* (New York: Oxford University Press, 1951).
21. Jowett (trans.), Plato's *Meno* (New York: Tudor Publishing Company), pp. 35-36.

22. *See:* James B. Conant, *On Understanding Science* (New Haven: Yale University Press, 1947).
23. *Ibid.*, p. 24.
24. Bertrand Russell, *Religion and Science* (New York: Oxford University Press, 1935), p. 8.
25. John Dewey, *A Common Faith* (New Haven: Yale University Press, 1934), p. 32.
26. *See:* William G. Pollard, *Chance and Providence: God's Action in a World Governed by Scientific Law* (New York: Scribner, 1958).
27. *See:* D. F. Swenson (trans.), Søren Kierkegaard's *Philosophical Fragments* (Princeton: Princeton University Press, 1936), pp. 60 ff.
28. A. Dru (trans.), Søren Kierkegaard's *The Journals of Søren Kierkegaard* (New York: Oxford University Press, 1951), entry #616, p. 181.
29. *See:* Swenson and Lowrie (trans.), Søren Kierkegaard's *Concluding Unscientific Postscript* (Princeton: Princeton University Press, 1944), p. 357.
30. Archibald MacLeish, *J.B.* (Boston: Houghton Mifflin, 1958), p. 147.
31. *Ibid.*, p. 111.
32. *Ibid.*, pp. 92-93.
33. *See:* William G. Pollard, *Chance and Providence: God's Action in a World Governed by Scientific Law* (New York: Scribner, 1958), pp. 103-104.
34. John Greenleaf Whittier, "Maud Muller," *The Complete Poetical Works of John Greenleaf Whittier* (Boston: Houghton Mifflin, 1884), p. 206.
35. Thomas Hood, "I Remember, I Remember," *The Poetical Works of Thomas Hood* (Boston: Houghton Osgood, 1879), Vol. 22, p. 280.
36. *See:* Sir James Jeans, *The Universe Around Us* (New York: Cambridge University Press, 1953), pp. 95 ff.
37. *See:* John W. Harvey (trans.), Rudolf Otto's *Idea of the Holy* (2d ed.; Fair Lawn, N. J.: Oxford University Press, 1950).
38. *See:* Karl Heim, *God Transcendent* (New York: Scribner, 1936).
39. D. F. Swenson (trans.), Søren Kierkegaard's *Works of Love* (Princeton: Princeton University Press, 1946), pp. 8-9.
40. Dylan Thomas, "Do Not Go Gentle Into That Good Night," *The Collected Poems of Dylan Thomas* (New York: New Directions, copyright 1952, 1953 by Dylan Thomas. Reprinted by permission of New Directions), p. 128.
41. *See:* C. S. Lewis, "Will We Lose God in Outer Space?" *Christian Herald*, Apr., 1958, pp. 19 ff.

42. Bertrand Russell, *Religion and Science* (New York: Oxford University Press, 1935), pp. 24-25.
43. *See:* C. S. Lewis, *Out of the Silent Planet* (New York: Macmillan, 1943).
44. *See:* C. S. Lewis, *Perelandra* (New York: Macmillan, 1944).
45. *See:* C. S. Lewis, "Will We Lose God in Outer Space?" *Christian Herald,* Apr., 1958, pp. 19 ff.
46. Lester del Rey, *Rockets Through Space* (Philadelphia: Winston, 1957), pp. 107-108.
47. *Ibid.,* p. 109.
48. *Ibid.,* p. 110.
49. Donald Cox and Michael Stoiko, *Spacepower* (Philadelphia: Winston, 1958), p. 174.
50. *See:* Loren Eiseley, *Darwin's Century* (New York: Doubleday, 1958).
51. From THE IMMENSE JOURNEY, by Loren Eiseley. Copyright 1953, 1957 by Loren Eiseley. (New York: Random House, 1957), pp. 157, 161.
52. *See:* H. E. Jacobs, *Summary of the Christian Faith* (Philadelphia: Muhlenburg Press, 1950), pp. 80 ff.
53. *See:* C. S. Lewis, *Perelandra* (New York: Macmillan, 1944).
54. From THE CONFESSIONS OF SAINT AUGUSTINE, in the translation of F. J. Sheed, Copyright 1943, Sheed and Ward, Inc., New York, p. 3.
55. Paul Tillich, *Systematic Theology II, Existence and the Christ,* Copyright 1957 by the University of Chicago (Chicago: University of Chicago Press), p. 95.
56. *Ibid.,* p. 96.
57. *Ibid.,* p. 96.
58. John Donne, "Devotions Upon Emergent Occasions, XVII, Meditation," *The Complete Poetry and Selected Prose of John Donne* (New York: The Modern Library, Random House, 1952), p. 441.
59. Paul Tillich, *Systematic Theology II, Existence and the Christ,* Copyright 1957 by the University of Chicago (Chicago: University of Chicago Press), p. 96.
60. Andrew G. Haley, "Can Russia Claim the Moon?" Reprinted from The AMERICAN WEEKLY, Jan. 19, 1958 (copyright 1958 by Hearst Publishing Co., Inc.), p. 2.
61. Andrew G. Haley, "Basic Concepts of Space Law," JET PROPULSION, vol. 26, no. 11, Nov., 1956, p. 951.
62. *Ibid.,* pp. 951 ff.
63. *Ibid.,* pp 951-952.
64. *Ibid.,* p. 952.

65. *Ibid.*, pp. 952-953.
66. *See:* Walter Lippmann, *Preface to Morals* (New York: Macmillan, 1929).
67. *See:* Walter Lippmann, *Essays in the Public Philosophy* (Boston: Little, Brown, 1955).
68. Andrew G. Haley, "Basic Concepts of Space Law," JET PROPULSION, vol. 26, no. 11, Nov., 1956, p. 953.
69. *Ibid.*, p. 954.
70. *Ibid.*, p. 955.
71. *Ibid.*, p. 955.
72. *Ibid.*, p. 956.
73. *Ibid.*, p. 956.
74. Donald Cox and Michael Stoiko, *Spacepower* (Philadelphia: Winston, 1958), p. 92.
75. *Ibid.*, p. 94.
76. *See:* George Orwell, *Nineteen Eighty-Four* (New York: Harcourt, Brace, 1949).
77. Paul G. Hoffman, "A Symposium . . . The Conquest of Outer Space," *National Council Outlook*, Mar., 1958, p. 7.
78. Andrew G. Haley, "The Law of the Space Age—Spiritual and Scientific Foundations," address before the Evangelical Academy, Loccum, Germany, Feb. 28, 1958.
79. C. S. Lewis, "Will We Lose God in Outer Space?" *Christian Herald*, Apr., 1958, pp. 75-76.
80. Aeschylus: *Prometheus Bound* translated by Edith Hamilton. Reprinted from *Greek Plays in Modern Translation*, edited by Dudley Fitts, The Dial Press, New York, 1947, pp. 519-521.
81. James B. Conant, *On Understanding Science* (New Haven: Yale University Press, 1947), p. xii.
82. *Ibid.*, p. xii.
83. From THE CONFESSIONS OF SAINT AUGUSTINE, in the translation of F. J. Sheed, Copyright 1943, Sheed and Ward, Inc., New York, p. 3.
84. *Ibid.*, p. 70.
85. Lowrie (trans.), Søren Kierkegaard's *Christian Discourses* (New York: Oxford University Press, 1952), p. 197.
86. *The Modern Theater*, Eric Bentley, Editor, Vol. I. Doubleday Anchor Books, Bertolt Brecht, "The Threepenny Opera," (Bentley-Vesey Version) (New York: Doubleday, 1955), pp. 167-168.
87. *Ibid.*, p. 174.
88. *See:* O. Fred Nolde, *Congressional Record*, January 8, 1951, "Moral Requirements in a Three-Pronged Peace Offensive."

Index

absolute determinism, lack of, 54-58
absoluteness of God, 107-114
absolute values, 28-29, 47-53
abstraction, and origin of science, 29-30
Adam, 88, 104, 131, 134
Aeschylus, 166-168
Ahab, story of, 61-62
Ahriman, 170
Ahura Mazda, 170
Air Commerce Act of 1926, 151
airplanes, speeds of, 4-5
air space, claims to, 150-152
airways, ownership of, 199-200
American Rocket Society, 2, 147
Amos, 185, 186
Andromeda, 91
angels, 122-129, 166
animals, instincts of, 27
anthropology, 1
anthropomorphism, 85-114, 127
apodictic certainty, 29-30
archangels, 124
archeology, 7
Aristarchus of Samos, 89
Aristotle, and scientific method, 32-34; on natural law, 150; on search for truth, 163-164; view of world, 89
Armageddon, 180
artificial satellites, 1, 2, 152-153
Aryan Christians, 20
Asia, 91
Astronautical Federation, 10
astronautics, 1, 2
astronomy, 1, 7
astrophysics, 1, 7
Athens, 21
atomic energy, 170-171
atoms, 96
atonement, doctrine of, 133-138
Augustine, St., 134, 173
aviation, 151-152

Babel, Tower of, 11, 18, 113
Bacon, Francis, 33
Bible, 61, 104; and kingdom of God, 164-165; and natural sciences, 76; and relation of man to God, 67-68; and sense of the holy, 94-95; angels in, 122; anthropomorphism in, 92-93; attitude toward revelation in, 73-77; authority of, 33; concept of God as spirit, 95-98; concept of time in, 65; concept of universe in, 137; contradictory symbols of, 180-181; drama of God incarnate, 116; eschatology of, 138-145, 196-199; faith in, 35; law of, 157-159; on resurrection, heaven, and earth, 113, 135; paradox in, 182-184; revelation and faith in, 43, 45-47, 50-51, 112; the God of, 50-51, 86-87, 98-107, 127, 136, 156; view of universe in, 88, 92-93, 137
Blake, Eugene Carson, 191, 193, 195, 197, 199, 201
botany, 7
Boyle, Robert, religion of, 20
Brecht, Bertolt, 182-183
British Royal Society, 20-21
Brunner, Emil, 160
Bruno, Giordano, 18, 19, 90, 97
Buchenwald, 127
Bulgaria, 152
Bush, Dr. Vannevar, 190

Calvin, John, 19
category of the individual, 69-72
cause and effect, 34
causes, primary and secondary, 48-49
certainty, 29-32
challenge of space age, 1-16, 179-180
chance and Providence, 59-62
Chance and Providence; God's Action in a World Governed by Scientific Law, 45
chemical propellants, 4
China (Communist), 152
Christ, 66, 76, 90, 100, 145; and atonement, 133-138; and changed view of universe, 90; and divine revelation, 42-44, 73-77; and international jus-

tice, 160-162; and natural law, 156-157; and other fallen races, 132-133; return of, 139; scientists and, 83-84
Christian churches, and science, 9-16; and space law, 148; early view of universe, 90; origin of, 75
Christian faith, 72, 115, 122-146
Christianity, and claims of science and religion, 14; and manipulation of man, 69; and man's tragedy, 176-177; and problems of technological revolution, 10-16; and science, 42-44, 190-193; distinguished from other religions, 43-44; of British Royal Society, 20-21; paradox of Jesus in, 54
Christian revelation, 79
Christians, and life on other planets, 142; and scientific achievements, 83-84; and scientism, 77; in space age, 84; revelation of God to, 100
Civil Aeronautics Act of 1938, 151
Cleopatra, 59
Colossians, 76
Common law, English, 149
Communion Liturgies, 124
communism, and science, 68, 77; propaganda of, 13-14, 184
Conant, James B., 36-38, 170
conflict of science and revelation, 76-77
contiguous space flight, 3
contingency, 54-58
contradictions, in modern physics, 52; in symbols of Bible, 180-181
Convention on International Civil Aviation, 152
Cooper, John Cobb, 147
Copernicus, 18-20, 89-90, 191
I Corinthians, 84, 135, 138
II Corinthians, 66, 176
cosmic rays and space travel, 5
cosmology, Biblical, 15, 18-19
Cox, Donald, 3, 118-119
creation, by God, 78-79, 83, 86, 93, 101-102, 115-146
Creator, 74, 92, 95, 98-99, 101; and life on other planets, 115-146; and view of universe, 90; distinguished from creation, 78-79, 86, 92-93, 102; God as, 108
crisis character of man's existence, 171-176
Croesus, 22
Cyrus, 22

Damon and Pythias, 160
Dante, 89, 187
Darwin, Charles, 119-121
Darwin's Century, 119
David, 94, 185
Davis, Will B., 192
death, 110-111
deduction, 29-32
deists, 47-48
Delphi, oracle of, 21-22
Del Ray, Lester, 3, 117-118
Democritus, 96
determinism, 34-35, 47-59
Devil, and fallen angels, 126-129
De Vitoria, Francisco, 150
Dewey, John, 38
dialectic materialism, 46
dimensions, God's transcendence of, 101-107, 113
Divine Comedy of Dante, 89
divine revelation, 42-44
Donne, John, 144

earth, age of, 5
Eddington, Arthur, 20
Eiseley, Loren, 119-121
electrochemical energy, 97, 102
electrons in matter, 97
Elijah, 62
Emerson, 170
empyrean, 89, 154
English common law, 149
entropy, law of, 63
Ephesians, 46, 127, 141, 175, 177
Epictetus, 157
Episcopal Church, 45
eros, 163
eschatology of Bible, 196-199; revised, 138-145
Essays in the Public Philosophy, 151
eternity, 106-107
Eve, 131
Evil One, 127-129
evil, problems of, 127-129

existence, crisis character of, 171-176
Exodus, 74, 100, 110, 158, 159
exploration of space, 85-114
Explorer I, 3

faith, and providence, 61-63, 126; and revelation, 112
fallen angels, 126-129, 166
fallen creatures, 132-133, 142
fall of man, 123
Faraday, Michael, 20
Fauchille, Paul, 151
first cause, God as, 48
freedom, 7-8, 59, 67-68, 71-72
free will, 57-58

Galatians, 53
galaxies, 4, 91, 119
Galileo, 18, 20, 90
generalization, man's power of, 30
Genesis, 88, 102, 168
Geneva, 19
geology, 7
German Rocket Society, 1
Ghandi, 191
gifts of God and science, 82-83
Gileadites, 185
God, 62, 65, 66, 72, 116, 139; absoluteness of, 107-114; and life on other planets, 115-146; and man's desire to know, 163-164, 169; and space exploration, 85-114, 193-196; and technology, 6-8; anthropomorphic concept of, 86-88, 127; as Creator, 52, 74, 78, 92-93, 95, 98-99, 101-102, 108, 123; as first cause, 48; concept of deists, 47-48; distinguished from creation, 78-79, 86, 93, 102; faith in, 35; gifts of, 82-83; hidden from man, 98-101, 108, 112, 136; images forbidden, 99; incarnate, 100, 116; in Christian belief, 42-44; intervention of, 57-58; in the universe, 95-98; justice of, 60-61; kingdom of, 164-165; law of, and natural law, 157-160; love for man, 83, 145-146; man estranged from, 175-176, 187; man made in image of, 28, 87, 127; man's love of, 173-176; "masks" of, 81, 82, 107, 139; of the Bible, 50-51, 86-87, 99-107, 127, 136, 156; omnipotence of, 58-61; ownership of universe, 51-52, 78-79, 92-93, 148-149; plan of, 45-46; providence of, 125-126; relation to individual, 70-72; relation to man, 51-54, 67, 73-77, 84, 132-133, 143-144, 157-158, 178-180; revelation of, 42-43, 45-46, 50-51, 87-88, 90; scientists and, 77-83; spatial concept of, 113; transcendence of, 103, 108
gods, Greek, 26-27, 92-93, 100
Greeks, 89, 97
Grotius, 150

Hackworth, 149
Hades, 88, 154
Hagen, 31
Haley, Andrew G., 2, 147-148, 149, 150, 151, 154
Hamburg, 187
Hammurabi, code of, 159
heaven, 85-114, 141-142, 195-196
Hebrews, 65, 88
Hegel, 97
Heim, Karl, 45, 48, 65, 103
Heisenberg's principle of indeterminacy, 36, 58
heliocentric planetary system, 89, 90
Hemingway, 115
heresy, 18-20
Hiroshima, 127
historical time, 64-67
history, 144-145
Hoffman, Paul G., 154
Holy Ghost, 100
holy of holies, 99-101
Homer, 115
Hosea, 75
Hume, 55, 56
humility, need for, 8-9
Hungary, 152
hybris, 123, 166, 187
hypersonic speeds, 4

I-It relation, 8, 42, 70; level of, 67-69
imagery of Bible, 138-140
immortality, 113
incarnation, doctrine of, 133-138

indeterminacy, 36, 54-58
individual, category of, 69-72; relation to God, 70-72
induction, 29-34
Inferno of Dante, 187
Inquisition, 90
insight, 40-41
instincts, 27
Institute of International Law, 151
International Air Transport Agreement of 1944, 152
International Astronautical Federation, 2
International Civil Aviation Convention, 152
International Geophysical Year, 152
international law, and natural law, 160; and space, 147-162; antithesis of natural law, 151; defined, 149; effect of aviation on, 151-152
international relations and space, 201-203
interplanetary law, proposals for, 15-16
interplanetary space flight, 3
interstellar space flight, 4
ion drive for space flights, 4
Isaiah, 87, 93, 122, 123
Isaiah, the prophet, 9, 93, 123
isolationism, 184-185
Israel, 62, 75, 136, 158
Israelites, 157, 184-185; and concept of God, 99-100
I-Thou relation, 8, 70, 133, 136, 169; level of, 67-69

James, 82
Jeans, Sir James, 90
Jehoshaphat, 62
Jeremiah, 188
Jerusalem, 99, 142
Jesus, 88, 145; and atonement, 133-138; and redemption, 135; and the kingdom of God, 164-165; as God incarnate, 100; as the Christ, 66, 75-76; church of and international justice, 160-162; crucifixion of, 131; God's love incarnate, 75-76; in Christian belief, 43; in the Bible, 88; paradox of position in Christianity, 54; return of, 139; Son of God, 132-133; tempted by Satan, 179
Jezebel, 62
Job, 173
Job, trials of, 60-61
John, 47, 86, 132, 135, 177
I John, 169
Jordan, Bishop Frederick D., 192, 194-195, 196, 198, 200, 202
Joseph, 186
Judah, 185
Judea, 142
justice, and indeterminacy, 39-60; and love, 160-161; and space exploration, 161-162; of God, 60-61
justitia civilis, 159

Kant, 35
Kepler, 20, 83, 94
Kierkegaard, Søren, 54, 56, 59, 101, 173
kingdom of God, 164-165
I Kings, 61, 62
Klemme, Huber F., 191-192, 194, 196, 200, 201-202
knowledge of limitations, 23-26

Lamentations, 188
law, common, 149; in space, 147-162; international, 147-162; interplanetary, 16; natural, 149-151, 156-157, 159-160; of Bible, 157-159; positive, 149-157
Lewis, C. S., 115, 117, 131, 141, 161-162
Ley, Willy, 1
life on earth, 5
life on other planets, 15, 115-146, 196-199
light, paradox of phenomena, 52-53; path of travel, 91, 102-103; speed of, 122
light-years, 90
limitations, knowledge of, 23-26; of scientific method, 41-44
Lippershey, 89
Lippmann, Walter, 151
Loccum, Germany, 4, 154
logical systems, 54-55
logos of Stoics and of Bible, 157
Lord's Supper, 138

love, power of, 169-171; of God, 83, 145-146
luck and Providence, 59
Luke, 110, 124, 130
Luther, Martin, 18, 78, 90

MacLeish, Archibald, 60
magic, fallacy in, 40
man, accessible to God, 107; and fallen races on other planets, 132-133; and indeterminacy, 58-59; and justice in space, 161-162; and love of God, 173-176; and power of pride, 165-168; and struggle for survival, 27-30; and uncertainty, 64-66, 172; and unfallen creatures, 129-131; as controlling universe, 51-52; Biblical concept of, 113-114; capacity for abstraction, 27-30; claim to justice, 59-60; crisis character of existence, 171-176; desire for power, 171-172; drive to know, 163-164, 169, 187; estranged from God, 175-176, 187; fall of, 123, 134; freedom of, 35, 67-68, 71-72; God hidden from, 98-101, 136; God revealed to, 87-88; in time, 66-67; intuition of, 32; lack of security, 110; limitations on transcendence, 105-106; loneliness of, 173; made in image of God, 28, 87, 127; manipulation by science, 69; nostalgia for past, 177-178; power of induction and deduction, 29-32; purpose in universe, 115-116; redeemed in Jesus, 135; relation to God, 51-54, 67, 73-77, 143-144, 157-158, 178-180; sense of the holy, 93-95; tragedy of, 176-177; transcendent over animal level, 105
man-made satellite, 1, 152-153
mapmaking, 7
Marcus Aurelius, 157
Mars, 3, 117, 147
Marxism, 46
masks of God, 81, 82, 107, 139
material and problem of evil, 127-129
materialism and modern physics, 50
materialists, 96
mathematical relations, acceptance in natural sciences, 34; and logical systems, 54-55
mathematical values, 28-29
mathematics, 47, 49-50
matter, contrasted with spirit, 96
Matthew, 126, 164, 186-187, 188
medicine, 7
Messiah, Jesus as, 75-76, 143, 144-145
meteorology, 7
method of sciences, 36-41, 68, 72
Middle Ages, and heresy, 18
Milky Way, 4, 91
mining, 7
missionaries to other planets, 145-146, 196-199
moon, man's exploration of, 3; national claims to, 147-162; studies from satellites, 2
Moses, 158
motion, 47, 49
Mount Sinai, 158, 159
mysteries, of Greeks, 26

Naboth, 61-62
Napoleon, 59
National Council Outlook, symposium on space travel, 10-11
natural history, 5
natural law, 149-150; and international law, 160; and law of God, 159-160; attitude of Christian church toward, 156-157; opposed to international law, 151
natural sciences, 32; and Bible, 76; and Christian faith, 72; and revelation in Bible, 73-77; changes in 20th century, 45; method of, 33-34, 36-41, 68, 72, 76; not in conflict with Christianity, 169; origin of, 29-30; presuppositions of method, 34-36
natural selection, 120-122
nature, order in, 34-35
necessity, as logical category, 54-55
Negroes, and justice, 160
New Testament, 86-87, 100, 158
Newtonian physics, 45, 47-49; time in, 63
Newton, Isaac, 20
Nicene Creed, 101

Nineteen Eighty-Four, 153
nuclear propellants, 4

Oak Ridge Institute of Nuclear Studies, 45
Oak Ridge, Tennessee, 45
Oberth, Herman, 1, 3
Old Testament, 99, 100, 135, 140, 184
Olympus, 23, 92
omnipotence of God, 58-61
On Understanding Science, 36
Orwell, George, 153
Out of the Silent Planet, 117
Oxnam, Bishop G. Bromley, 191, 194, 195-196, 198, 199, 201

Pan, 100
pantheism, 18, 19, 21, 50-51, 78, 97-98, 101-102
paradox, in Bible, 182-184; in modern physics, 49-58, 63-64
Paris Convention for the Regulation of Air Navigation, 1919, 151
Pascal, 8
Pasteur, Louis, 20
Paul, St., 46, 74, 84, 134, 138, 141, 180, 187
peace and war in space age, 180-181
Peenemünde rocket installations, 1
Perelandra, 117
Philippians, 53
photon propulsion, 4
physics, modern, and absolutes, 49-58; and God, 50-54; paradox in, 52; relativity in, 63-64; time in, 63-64
physics, Newtonian, 45, 47-49, 63
Pickett, Clarence E., 191, 194, 196, 197-198, 199-200, 203
Pittenger, W. Norman, 192, 195, 196, 198-199, 200, 202
Pius XII, on space travel, 10
planetary system, heliocentric view of, 89-90; life on other planets, 118
planets, fallen races on other, 132-133; life on other, 115-146, 196-199; missionaries to other, 145-146, 196-199; ownership of, 199-200; studied from satellites, 2
Plato, 150, 163
Pollard, William G., 45, 63
Poseidon, 125
positive law, 149-151
post hoc, ergo propter hoc, fallacy in scientific method, 40
poverty, problem of, 182-184
Preface to Morals, 151
presuppositions of natural sciences, 34-36
pride, power of, 165-168
Priestley, Joseph, 20
primary causes, 48-49
probability, and necessity, 55-56; and uncertainty, 64-65; in induction and deduction, 30-31; in matters of fact, 56; mathematical, 57
Prometheus, and desire to know, 166-167
Prometheus Bound, 167
propellants for space flight, 4
prophets, warnings of, 184-189
Protestantism, 156-157
providence, and faith, 61-63; angels as instruments, 125-126; a possibility, 58-61; faith in, 126
Psalms, 60, 79, 80, 92, 93, 102, 111, 122, 123-124, 125, 157, 189
Ptolemy, view of world, 89
pure research, 6-7
Pythias, and Damon, 160

Quakers, 20

radiation, 7, 57
redemption, cosmic, 133-145; doctrine of, 83-84
relativity in modern physics, 63-64
religion, and science, 6-8, 14, 17-84; and space travel, 10-11; distinguished from Christianity, 43-44
resurrection, 133; and triumph over evil, 129; Biblical view of, 135; meaning of, 113-114
revelation, 79; and conflict with science, 76-77; and faith, 112; attitudes toward, 73-77; of God to man, 100, 107, 112
Revelation, 33, 122, 135, 136, 140, 141
rockets, German, 1

Rockets Through Space, 3, 117
Roman Catholic Church, 18-20, 156-157
Romans, 74, 134-135, 175, 180, 187
Royal Society, British, 20-21
Russell, Bertrand, 37-38, 116
Russia, 1-2, 11, 13-14

St. Augustine, 134, 173
St. Paul, 46, 74, 84, 134, 138, 141, 180, 187
Salk vaccine, 40
salvation, cosmic, 138-145
Satan, 60, 61, 72, 116; a fallen creature, 128; and temptation of Jesus, 179; fall of, 126-129; in Christian tradition, 166
satellites, artificial, 1, 2, 152-153
Schiotz, Frederik A., 190, 193-194, 195, 197, 199, 201
"Schlauraffenland," 81
science, and Bible, 76; and Christianity, 9-16, 42-44, 72, 190-193; and gifts of God, 82-83; and manipulation of man, 69; and religion, 6-8, 14, 17-84; and revelation, 73-77; and space-time, 63-64; as observation and experience, 32; Communists and, 77; Conant's definition of, 37; conflict with theology, 17-21; dangers of, 68; development of, 7, 32-34; discoveries as God's thoughts, 83; exact, 39-40; method of, 36-41, 69-70; origin in man's power of abstraction, 29-30; reconciling with religion, 21; relation to religion, 27; Russell's definition of, 37-38; so-called miracles of, 13; spirit of, 166-167
scientia, 32
scientific attitude, 36-37
scientific method, 32-34, 39-40, 42-44, 46
scientific time, 63-64
scientism, 41-42, 68, 77
scientists, and masks of God, 81; as men of God, 77-84; attitudes toward life on other planets, 117-122; religion of, 20
security, lack of, 110; search for, 72-73
senses and access to God, 98-101
Servetus, Michael, 19
Siegfried, 31
Socrates, 21-22, 31, 42, 157; against relativism, 150; and law, 160; and problem of wisdom, 21-26; knowledge of limitations, 23-25; on good and evil, 25-26
solar system, in galactic system, 91
Son of God, and atonement, 133
Sophists, 150
Soviet Union, 1-2, 11, 13-14, 147-162
space, conquest of, and international relations, 201-203; emptiness of, 92; God and, 102-107; in Newtonian physics, 47, 49; internationalization of, 154; justice in exploration, 161-162; territorial claims in, 16; traditional theology and, 15
space age, and man's relation to God, 174-176; and nostalgia for past, 177-178; challenge of, 1-16, 179-180; Christians in, 84; theology in, 145-146; war and peace in, 180-181
space exploration, and anthropomorphism, 85-114; and Biblical cosmology, 15; and God, 85-114, 193-196; and man's faith, 112-113; justice in, 161-162; manned, 3
space law, 1, 147-162
space platform, 153
Spacepower, 3
space-time continuum, 64; God beyond, 101-107
space travel, 1-5, 12-14, 111-112, 118-119
Spinoza, 97
spiral nebula Andromeda, 91
Spirit, 95-98, 134; contrasted with matter, 96
spiritual beings, 122
spiritual reality and modern physics, 50
Sprat, 20
Sputnik II, 3
Stoics, 157
Stoiko, Michael, 3, 118-119
Suarez, Francisco, 150-151
substance, 49
suns, and other planetary systems, 118
survival, man's struggle for, 27-30

technological revolution, 5-8, 10-16
technology, 7-8

telescopes, 89-91
telos, 163
Ten Commandments, 158
territorial claims in space, 16, 147-162
theater, of Greeks, 26-27
The Christian Science Monitor, 193
The Evangelical Academy, Loccum, Germany, 4-5
"the holy," sense of, 93-95
theology, and space travel, 14-16, 145-146; conflict with science, 17-21
The Proud and the Profane, 111
thermodynamics, second law of, 63
The Threepenny Opera, 182-183
The Universe Around Us, 90
Thomas, Dylan, 111
Tillich, Paul, 142-144
time, concept in Bible, 65; creation of God, 106-107; historical, 64-67; in Newtonian physics, 47, 49, 63; relativity of, 124; scientific, 63-64
Tower of Babel, 11, 18, 113
transcendence of God, 108-110
travel in space, 1-5
Trinity, 19-20
truths of the reason, 32

uncertainty and probability, 64-65
unfallen creatures on other planets, 129-131
U.S.S.R., 1-2, 11, 13-14, 147-162
Unitarians, 20
United Nations, 148, 154
United States 1; and internationalization of space, 154; and space travel, 13-14; claims in space, 147-162; justice in, 160; scientific development in, 11; standard of living in, 184
U. S. Army Ordnance Missile Command, 2
universe, ancient view of, 89; and God's sovereignty, 78-79; and revised eschatology, 138-145; and state of equilibrium, 63; as controlled by man, 51-52; Biblical concept of, 137; changed picture of, 88-92; God in, 95-98; infinite possibilities in, 51; in Newtonian physics, 47-49; life on other planets, 115-146; measurement of, 90; number of galaxies in, 118-119; order in, 57; pantheistic view of, 97-98; purpose in, 116; view of, 91-92
University of Pennsylvania, 119
Unmoved Mover, concept of Aristotle, 163
utopia, 171

Venus, 3, 117, 147
vocation, and redemption, 83-84; doctrine of, 81-82
Von Braun, Wernher, 1, 2, 5-8
Von Diringshofen, Prof. Dr., 5

war and peace in the space age, 180-181
weightlessness, in space travel, 4-5
Weil, Kurt, 183
Wesley, John, 19
Whittier, 64
"Will We Lose God in Outer Space," 115
wisdom, problem of, 21-26
witch-hunts, 19
Word made flesh, 86
world, views of, 88, 89
World War I, 151
World War II, 151
Wright brothers, 151

Xantippe, 21

Zeus, 81, 167
zoology, 7

THEOLOGY LIBRARY
CLAREMONT, CALIF.

11242